

Institution: UNIVERSITY OF BIRMINGHAM
Unit of Assessment: C26 Sport & Exercise Science, Leisure & Tourism
Title of case study: Adoption and maintenance of active lifestyles in ‘hard to reach’ communities
<p>1. Summary of the impact</p> <p>It is widely acknowledged that increasing physical activity (PA) levels within ‘hard-to-reach’ groups is challenging. Researchers in the School have addressed these challenges resulting in impacts in two recognized ‘hard-to-reach’ groups: ethnic minority communities and patients who are at risk of disease onset and/or are suffering from diminished quality of life/disability due to chronic disease. In the former, our research has demonstrated how to make PA accessible and appropriate; in the latter, in addition, we have increased physical activity levels. In both examples, our research has changed professional training and/or standards.</p>
<p>2. Underpinning research</p> <p>In terms of physical activity (PA) engagement, some groups have been identified as ‘hard-to-reach’ although it has also been argued that researchers and health care professionals are simply not trying to reach them in appropriate ways. Research conducted in the School focuses on understanding levels and types of PA engagement, along with personal, social, cultural, and environmental factors that facilitate or hinder PA behaviours in two specific hard to reach groups. The first group, ethnic minority communities, has been served by research that sought to quantify and understand the behavioural patterns influencing physical activity and sedentary time. This includes a systematic review of PA and sedentary time amongst South Asian women (Babakus & Thompson, 2012); and a research project focusing on barriers to youth engagement in physical education (PE), school sport, and physical activity in Muslim communities [funded by the Birmingham Advisory Support Services (BASS), Benn, Dagkas et al 2007-8]. The second group is patients, including individuals with risk factors for cardiovascular disease (CVD) and those with rheumatoid arthritis (Duda, Veldhuijzen van Zanten et al; 2008 – 2013), with research focusing on the delivery of appropriately structured exercise and PA promotion/behavior change programmes.</p> <p>PA promotion in ethnic minorities. Although ethnic minorities living in the UK and other Western countries are generally thought to be less active than the white mainstream population, detailed evidence on this position is extremely limited. A systematic review conducted within the School (Thompson, Professor of Public Health Nutrition, joined the School September 2012) was the first to examine all published evidence on PA and sedentary time (ST) amongst <u>South Asian women</u> (R1). The findings identified the limitations of previously published research, particularly an almost exclusive reliance on self-report measures that are not validated in this population. Moreover, the review indicated that existing studies are of relatively low quality with only two studies examining ST. The research calls into question the use of PA and ST self-report measures in South Asian women and suggests that these commonly employed methods may not be the best investment of time and resource for community groups, local authorities and health professionals seeking to gather baseline information, inform change, or evaluate the effectiveness of health promotion initiatives.</p> <p>The ‘BASS Project’ (co-led by Dagkas, Senior Lecturer in PE and Youth Sport, left the School April 2013) was funded (£30,000) by BASS [School Effectiveness Division, Children, Young People and Families (CYPF) programme]. This project was a partnership between the School and the Department of Islamic Studies at the University, the Senior Advisor and colleagues within CYPF, and local and regional primary and secondary schools. The research was commissioned in response to Local Authority concerns about a growing problem of parental withdrawal of <u>Muslim girls from PE in schools</u>. The BASS project has two key strengths that illustrate the School’s authenticity approach to research in this field: <i>depth</i> in understanding the issues from the perspectives of the Muslim girls themselves (n=145); and <i>breadth</i> with contributions from a wide range of key stakeholders and end users including parents (n=32), head teachers and teachers (n=19), community groups and national associations (R2).</p> <p>PA promotion in at-risk/clinical populations. Exercise referral schemes typically commence when a GP/practice nurse refers a patient, with at least one risk factor for CVD, to an exercise programme run from a community or commercial leisure centre. The ‘EMPOWER’ project (led by</p>

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Duda, Professor of Sport and Exercise Psychology; R3) involved testing the effect of a 3-month structured exercise on referral programme, together with a theory based motivation intervention, on participants' PA adoption/maintenance and associated well-being benefits (2007 to 2009). This trial was funded (£165,000) by and involved collaboration with the South Birmingham Primary Care Trusts, NHS, and Birmingham City Council. The intervention was grounded in Self Determination Theory (SDT) and entailed the training of health and fitness advisors (HFAs) in the Birmingham catchment area to provide one-on-one physical activity promotion consultations. These consultations were designed to be supportive of individuals' feelings of competence, autonomy and relatedness within their physical activity engagement. Results at 6 months follow-up revealed no between arm differences in changes in physical activity levels, but differences in anxiety and ratings of overall health emerged favouring the participants taught by SDT-trained HFAs. The findings provided partial support for the SDT-based intervention but also indicated a need for: (a) SDT-based training for all instructors who create the 'climate' in the gym, and (b) a post-exercise programme 'top up' consultation when individuals are commencing the PA maintenance phase.

Patients with rheumatoid arthritis (RA) have an increased risk for CVD, leading to premature death in 50% of patients. In our systematic review (R4) the researchers (including Veldhuijzen van Zanten, Lecturer in Biological Psychology) concluded not only that it is possible for RA patients to engage safely in physical activity, but also that PA leads to a number of health benefits. Another important conclusion was that the effects of physical activity/exercise on the risk for CVD had not been investigated systematically. They subsequently examined the effects of exercise on CVD risk in 20 RA patients (R5). Results indicated that an individualised aerobic and resistance exercise intervention can lead to significantly improved cardiorespiratory fitness, and a reduction in individual CVD risk factors, composite CVD risk, and disease activity/severity.

The physical activity promotion literature clearly indicates that clinical populations, such as patients with RA, do not engage in sufficient levels of PA to accrue health benefits. Further collaborative work, funded by Arthritis Research UK and led by Dr Holly John (School PGR student; 2007 – 2011) assessed the educational needs of RA patients and health care providers with respect to lifestyle modification required for reduction of the increased cardiovascular risk. This led to the development and formal evaluation of public information on the health effects of regular PA for people with RA (R6). Drawing from our work on appropriate and effective exercise for RA and building on the 'Empower' Trial described above, we are now running a NPRI-MRC funded project (Duda, PI; £407,371; March 2009 – March 2013 including an additional year (through March 2014) funded by Dudley NHS Group of Hospitals for £46K) implementing a Self Determination Theory-informed intervention to foster CV fitness, autonomous motivation, mental health, and PA maintenance in RA patients engaged in a 3 month exercise programme (target sample = 150). The intervention entails the delivery of SDT-informed one-on-one consultations at 1, 2, 3 and 5 months and includes the training of the instructors who supervise the patients' exercise sessions.

3. References to the research

- R1) Babakus, W.S. & Thompson, J.L. (2012) Physical activity among South Asian women: a systematic, mixed-methods review. *International Journal of Behavioral Nutrition and Physical Activity*. 9:150 [Available on <http://www.ijbnpa.org/content/9/1/150>]. Published in this open access journal on 20 December 2012, this article has earned the designation of "highly accessed" by BiomedCentral (3677 accesses as of 13 October 2013).
- R2) Dagkas, S., Benn, T. & Jawad, H. (2011) Multiple Voices: Improving participation of Muslim Girls in Physical Education and School Sport, *Sport, Education and Society*. 16(2): 223-239. [DOI:10.1080/13573322.2011.540427].
- R3) Fortier, M. S., Duda, J. L., Guerin, E. & Teixeira, P. J. (2012). Promoting physical activity: development and testing of self-determination theory-based interventions. *International Journal of Behavioral Nutrition and Physical Activity*, 9 (20). [Available on <http://www.ijbnpa.org/content/9/1/20>]
- R4) Metsios GS, Stavropoulos-Kalinoglou A, Veldhuijzen van Zanten JJ, et al. Rheumatoid arthritis, cardiovascular disease and physical exercise: a systematic review. *Rheumatology* (Oxford) 2008;47:239–48. [DOI: 10.1093/rheumatology/kem260].
- R5) Stavroupos-Kalinoglou A, Metsios GS, Veldhuijzen van Zanten JJCS, Nightingale P, Kitas GD & Koutedakis Y. (2012). Individualised aerobic and resistance exercise training improves cardiorespiratory fitness and reduces cardiovascular risk in patients with rheumatoid arthritis.

Annals of the Rheumatic Diseases. [DOI: 10.1136/annrheumdis-2012-202075].

R6) John H, Hale ED, Treharne GJ, et al. Patient evaluation of a novel patient education leaflet about heart disease risk among people with rheumatoid arthritis. *Musculoskeletal Care* 2011;9: 194-9. [DOI: 10.1002/msc.207].

4. Details of the impact

PA promotion in ethnic minorities.

The impact of the findings of the systematic review by Babakus and Thompson has been immediate (paper published in December 2012, and used to inform community activities from January 2013 to present), and builds upon established links between Thompson and community groups promoting health and PA amongst ethnic minority women in Cardiff. In particular, the Bangladeshi Reference Group (BRG) is using the research to support evidence-based strategies and local engagement activities to remove barriers to PA participation [1]. BRG is a community group formed in 2003 that works to provide access to health and social care assistance and promotes PA for ethnic minority women. This includes partnering with local leisure centres to provide culturally appropriate types of PA engagement, facilitating transport to organised activities, training women as lifeguards and creating the Playbus crèche facility that enables women to engage fully with community-based physical activities. The BRG is wholly dependent on volunteers, donations and funds from local authority and charitable organisations. They have used the results from the systematic review to inform a local survey (on-going since January 2013) examining barriers and enablers impacting women's abilities to engage in both physical and social activities. The research has not only been crucial to informing the design and delivery of the survey, but is a critical piece of evidence making the case for the existence of the BRG. The research has also enhanced their ability to raise funds to conduct, analyse, and disseminate the results of the survey to key stakeholders and decision makers including Cardiff City Council, local authority physical activity leads, activity-related service providers, and religious leaders.

The BASS project resulted in the development of evidence-based guidance for schools on improving inclusion for this group of young people [2]. A City Launch of the Guidance document (Nov 2008; led by Tony Howell, Director CYPF) was attended by 45 representatives of the Muslim Council of Britain, the National Subject Association for Physical Education, head teachers, teachers and city leisure staff. The guidance was sent (Dec 2008) to all schools in the West Midlands region via the Birmingham City Council to signal a change to professional standards to promote the inclusion of Muslim Girls in PE. Reflecting the sharing of research with relevant stakeholders, the National Subject Association for Physical Education held a Seminar (May 2009) where researchers from the University and Helen Miles from CYPF presented on the 'research-to-practice' process exemplified in the BASS Project. The Guidance document also formed the basis of a workshop with delegates from schools, higher education representatives and Initial Teacher Training providers. This document is freely available from the website of the National Dance Teachers Association (<http://www.ndta.org.uk/advice-information/Muslim-girls-and-sport/>). As of 31 July 2013, the document has had 1931 views total (1723 unique views).

PA promotion in at-risk/clinical populations.

In the Empower project, Duda sat on the Birmingham Exercise on Referral Scheme Advisory Board and regularly exchanged with and secured input from key stakeholders from Birmingham City Council and Birmingham PCTs. A systematic training programme was implemented (Sept 2007 – Jan 2008) with 6 Health and Fitness Advisors (HFAs) and theory-informed information physical activity promotion booklets were developed and delivered throughout the programme. Regular meetings were held with the HFAs to provide feedback/suggest changes to the intervention. Of the 1683 people referred to the exercise on referral programme during the recruitment period, 347 (20.6%) were recruited to the study with 184 being randomly assigned to the intervention arm. Results were disseminated via a report to funders (April 2009 [3]) and a one day meeting involving all Birmingham HFAs, Birmingham Exercise on Referral Steering Board and other key representatives from local PCTs (May 2009). This report led to specific and enduring changes in practice in the content, behaviour change approach adopted and assessments utilised in the induction consultations led by the HFAs. The report also impacted policy, being described as "highly influential in preventing disinvestment and decommissioning of the EoP scheme" and with evidence that it "helped to identify the need for free access to exercise facilities, a wider range of

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activities and on-going support, which in turn fed into the development of the award winning Birmingham Be Active scheme (free gym and exercise activities).” [4,5]

The systematic review on exercise in RA patients was cited (April 2009) by the NHS Evidence Service [managed by the National Institute for Health and Clinical Excellence (NICE)]. Their remit includes ‘providing access to authoritative clinical and non-clinical evidence and best practice’ to assist people in the NHS, public health and social care sectors in their decisions by guiding them towards ‘trusted high quality resources.’ The review has informed recommendations on the management of early RA provided by the Scottish Intercollegiate Guidelines Network (part of NHS Quality Improvement Scotland). This latter impact is particularly important given that patients with RA have traditionally been advised by clinicians and health professionals to reduce their levels of physical activity. The review also laid the bases for the European League Against Rheumatism (EULAR) recommendations for cardiovascular risk management in RA arthritis, which stated that ‘evaluating the effects of lifestyle modification on cardiovascular risk was added to the future research agenda’. Such research work was indeed pursued in our controlled trial of individualised exercise training for individuals with RA, demonstrating, for the first time, significant health and welfare benefits not only in cardiovascular fitness, classical risk factors (such as hypertension and dyslipidaemia) and vascular function but also in overall well-being. This work has also had a more formal impact on practice in at least some areas of the National Health Service in the UK. For example, in Dudley, patients with rheumatoid arthritis are offered free enrolment onto supervised aerobic exercise provided by “Action Heart”, traditionally a cardiac rehabilitation centre. This is part of their overall care package funded by the local NHS. Drawing on our research, physical activity/exercise is now firmly embedded as a component of the early management of RA in recommendations by EULAR, the British Society of Rheumatology and the American College of Rheumatology (ACR). The National Rheumatoid Arthritis Society (NRAS) also includes information on the value of regular PA on their website. [6]

The educational leaflet developed by John and colleagues has, since 2010, been freely provided in the routine rheumatology outpatient clinics of Dudley Group and other NHS Trusts from June 2013 onwards. The information contained within the leaflets is used by rheumatologists as well as allied health professionals. Within the on-going PA/behaviour change trial with RA patients, the researchers conducted focus groups with key stakeholders to customise the assessment tools and gain further understanding of how RA patients view physical activity and their reported barriers to PA engagement. This information, and findings from a baseline survey completed by more than 300 RA patients on the National Rheumatoid Arthritis Society registry, contributed to customisation of the psychological intervention (June – August 2010). Additionally, in terms of impact on service provision, 8 fitness instructors at Action Heart Dudley medical charity were trained to deliver the intervention and (to July 2013) 54 RA patients received the autonomy supportive one-on-one PA consultations. [7] Findings will be disseminated via the NRAS website. [6]

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

- [1] Survey development and engagement with key non-academic stakeholders: factual statement provided by Chair, Bangladeshi Reference Group.
- [2] Documented change to professional standards: Birmingham City Council (2008) Improving Participation of Muslim Girls in Physical Education and School Sport: Shared Practical Guidance from Birmingham Schools 2008. www.birmingham.gov.uk/childrenservices
- [3] An evaluation of the Birmingham Exercise on Prescription service: Standard provision and a self-determination focussed arm: Report to funders (April 2009) [available on request]
- [4] Documented change to exercise on referral scheme in Birmingham due to commissioned project: factual statement provided by Commissioning Lead, Birmingham Public Health, Birmingham City Council.
- [5] Documented change to consultation approach/content as delivered by Health and Fitness Advisors in Birmingham exercise on referral scheme: factual statement provided by Vulnerable Adults Projects Manager, Birmingham City Council.
- [6] Confirmation of impact of research for RA patients and dissemination efforts: factual statement provided by Executive Director, National Rheumatoid Arthritis Society.
- [7] Documented impact of training on exercise instructors at Action Heart, Dudley: factual statement provided by Director, Action Heart.