

Page 1 – General Information

Project code	TSAB06
Partner University	Teesside University
Faculty/School/Department/Research Centres	Centre for Rehabilitation and Exercise Sciences; School of Health & Social Care
First supervisor Please provide name and weblink	Dr Leah Avery, C.Psychol, PhD https://research.tees.ac.uk/en/persons/leah-avery
Second supervisor Please provide name and weblink	Dr Anna Haste, C.Psychol, PhD https://research.tees.ac.uk/en/persons/anna-haste
Third supervisor Please provide name and weblink	Professor Greg Atkinson, PhD https://research.tees.ac.uk/en/persons/greg-atkinson
Fourth (external) supervisor	
External/industrial supervisor	Professor Mike Trenell, Chief Scientific Officer, Changing Health Limited
Which of the supervisors listed above is an early-career-researcher	Dr Anna Haste
Contact details for project for informal applicant queries Email address	Dr Leah Avery Leah.avery@ncl.ac.uk +44 1642384130
DTA Programme: Please delete as necessary which DTA programme this project relates to:	DTA Applied Biosciences for Health
Project title	Evaluating the impact of a digital lifestyle behaviour change intervention for the management of type 2 diabetes



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Page 2 – Project Description

<p>Scientific Excellence (500 words)</p>	<p>Diabetes currently affects more than 371 million people worldwide, and this number is expected to rise to 552 million by 2030. Type 2 diabetes is a serious long-term condition that can lead to morbidity and premature mortality due to diabetes-related complications such as cardiovascular disease. Current approaches to targeting lifestyle behaviour change to manage type 2 diabetes in routine clinical settings are largely ineffective. As such there is a pressing need for interventions that lead to improved glycaemic control and that can be delivered at scale given the magnitude of the problem.</p> <p>To address this need, an evidence-based digital intervention incorporating structured education and behaviour change tools was developed for delivery direct to patients with the support of lifestyle behaviour coaches. This intervention was the result of over 8 years of multidisciplinary scientific research, i.e. research informed decisions about the theory underpinning the intervention, intervention content, and duration and it is currently being used by primary care organisations and other healthcare providers across the UK and abroad. To date, case study evidence is encouraging highlighting the potential of the intervention for effective management and reversal of type 2 diabetes and improvement in quality of life in a large number of patients. Nevertheless, a formal evaluation of the intervention is required to provide robust scientific evidence. It is important to understand whether the intervention impacts positively on behavioural and clinical outcomes, and whether faithful delivery of the intervention is possible at scale and instrumental in this process.</p> <p>A project plan has been developed in accordance with the needs of our commercial partner to enable them to respond to healthcare providers in terms of whether this intervention is beneficial overall. Questions to be addressed include, are patients fully engaging with the intervention? Are they using it in a meaningful way? And is it impacting positively on the management of their diabetes (i.e. are any behavioural changes observed [diet, physical activity] sufficient to impact positively</p>
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	<p>on outcomes of behaviour [weight and glycaemic control]? However, there is scope for the PhD candidate to contribute their own ideas, based on their expertise and interests, and this will be actively encouraged.</p>
<p>Aim (400 words)</p>	<p>Aim: To evaluate the impact of an evidence-based intervention incorporating structured education and behaviour change tools supported by lifestyle behaviour coaches on the management of type 2 diabetes.</p> <p>Methods and Innovations: A mixed methods approach will be adopted to investigate the following issues:</p> <ul style="list-style-type: none"> i) Fidelity of delivery assessment to determine whether the behavioural support component of the intervention is delivered as planned by lifestyle behaviour coaches ii) Analyses of routinely collected quantitative data to explore the use of the digital intervention to understand whether all components are utilised and whether specific usage patterns of exist. iii) Analyses of behavioural, anthropometric and clinical data to understand the impact of the intervention on diabetes management; and sub-group analyses to understand the impact of the intervention based on specific patterns of intervention use. <p>In phases (i) and (ii), the analytical approach proposed was adopted by Sevick et al 2008: 29:396-409 who evaluated the</p>



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	<p>impact of a lifestyle intervention. For example, we will measure rates for understanding the usefulness of the digital intervention, ease in entering data, ease in interpreting feedback outputs from the system and preference for continuing with the intervention.</p> <p>In phase (iii), we will follow a framework of evaluation for digital health interventions (Murray et al., 2016;51:843–851). For analysis of quantitative data, associations between intervention use, behavioural outcomes, weight status and clinical data will be explored using a multivariable (predictors) and multivariate (outcomes) statistical model.</p> <p>The analyses approaches proposed are innovative in that they aim to identify which combination of behavioural intervention components have the maximal impact on diabetes management. This knowledge is important to inform clinical care delivery, future training of healthcare professionals, and further iterations of the digital intervention to be evaluated as well as the development of other interventions for long-term health conditions.</p>
<p>Strategic Relevance (300 words)</p>	<p>The proposed research targets two distinct, but interrelated, areas of strategic importance – i.e. management of type 2 diabetes and digital health. Specifically, identification of optimal strategies for supported self-management of type 2 diabetes will inform further development of scalable digital management solutions for long-term health conditions. A plethora of digital interventions exist and have reported mixed findings in terms of changes in lifestyle behaviours and concomitant clinical outcomes in the short-term. One explanation for this heterogeneity could be that it is rare for digital interventions to be developed in accordance with health behaviour change theory and that involve a systematic selection and inclusion of evidence-based behavioural strategies. As such, the development of many digital interventions doesn't take into account what predicts behaviour, behaviour change and maintenance of behaviour. Therefore the findings of our research will contribute to the evidence-base in this regard and guide development of other interventions.</p>



<p>Interdisciplinarity and fit with DTA3</p>	<p>The intervention to be evaluated was developed in collaboration with a multidisciplinary team of health psychologists, medical professionals, designers, web developers, physiologists and computer scientists. This team continues to work on modifications and iterations of the intervention as well as development of new interventions. This team will therefore contribute advice and expertise to the proposed doctoral research giving the candidate experiences in potentially new and novel areas. The supervision team combines expertise in health psychology (academic and clinical), health sciences and biostatistics and clinical physiology in the context of diabetes management and prevention.</p>
<p>Industrial Relevance (300 words)</p>	<p>Collaborative work with the proposed commercial partner (Changing Health Limited, Newcastle upon Tyne, UK) will facilitate further external placements with European centres piloting the intervention in Germany and the Netherlands. However, opportunities also exist to attend placements within UK University's and overseas using existing networks and contacts via the supervision team. These placements will be tailored in accordance with the training needs and interests of the PhD candidate.</p>
<p>Economic and Societal Impact (300 words)</p>	<p>The proposed research has several potential beneficiaries. The intervention is delivered directly to people with type 2 diabetes, and to date outcomes have been encouraging. A formal, scientifically robust evaluation will facilitate decision-making among clinicians and commissioners in terms of whether to continue referring patients to this service nationally. Findings will facilitate training of clinical teams in terms of clinical strategies that can be used in practice to support self-management of type 2 diabetes and other long-term health conditions. Finally, industry will benefit when equipped with evidence-based insights in to which aspects of digital self-management interventions are associated with better clinical outcomes. Collectively, there is potential to make substantial economic and societal impacts.</p>

Page 3 – Admission Requirements



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Specific Admission Requirements	Applicants should hold a good honours degree (2.1 or above) in Psychology and an MSc in Health Psychology or Behavioural Science or a closely related discipline. The successful applicant will have knowledge of behavioural intervention development and/or evaluation and quantitative research methods and statistics.
Minimum IELTS score	6.5



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