# Abstract

Obesity continues to be a growing problem to world health, while many potential solutions to the problem have been put forward the issue persists, video games have been linked as causes of obesity, yet research has also shown positive exercise habits can be gained through the use of video games. This paper presents a new approach designed around the idea of building positive habitual behaviour in users that lack the motivation to take part in regular fitness activities. Through regular use of this application, in theory a user should start to develop beneficial habits relating to regular exercise, where initially the was none.

# Introduction

The UK has one of the highest levels of obesity in Europe, Europe’s average level of obesity sits at 21.4% with the UK averaging at 24.9% (The State of Food and Agriculture 92-93). Obesity levels have more than trebled in the last thirty years with estimates that more than half of the population could be obese by the year 2050 (Stephenson, 2013).

The cause of this dramatic increase in people’s weight has been linked to an increasingly sedentary lifestyle as well as greater consumption of energy dense foods (Purnel et al, 1999).

Behavioural changes have been suggested as a method of reversing this downward trend in health, however an individual’s behaviour is typically the result of multiple influences, often making it resistant to change (Thompson et al., 2008). Subsequently to change an individual’s behaviour small changes should be made to the mediation variables which indirectly contribute and influence an individual’s behaviour (Preacher and Hayes, 2008).

Despite video games being linked as a cause of obesity (Vandewater, Shim and Caplovitz, 2004), Pate (2008) argues that, in a contemporary society where “electronic entertainment is not going to go away”. The use of video games has been suggested as a way to positively influence a user’s health, (Lin et al., 2006) due to the high level of immersion and interaction they offer. With video game usage on the rise (2016 Global Games Market Report, 2016) this method of behavioural change becomes an increasingly viable option.

As such the following report details the creation of an application that takes a novel approach to the problem of obesity. This is based around the idea of appealing to users who have no real motivation to regularly exercise, in the hopes of slowly producing behavioural change.

# Project scope

The scope of this project was to create a mobile game that makes use of fitness data gathered from health tracking hardware and software located on the user’s mobile device to grant a benefit to the users in game experience. The application will be designed operate in a multiplayer setting, with actions of the player having some impact on other users.

Crucially the application is designed to be usable without the need to interact with the fitness related functionality, the goal of this is to make the application more accessible to users who have no motivation to take part in fitness based activities. Once invested in the application it is then hoped the user will make use of these fitness based elements to improve their player experience, resulting in the growth of positive habitual behaviour, which otherwise would not have been developed.

# Project Overview

## Chapter 2: Context

Chapter two documents the research undertaken in this project within the scientific fields of video games and fitness. Several peer reviewed papers are discussed and their findings critiqued, the goal of this chapter was to identify a gap in the current research available to the scientific community.

## Chapter 3: New Ideas

New ideas acts upon the findings from Chapter 2: Context, having performed sufficient research into the topic area, Chapter 3: New Ideas documents the project ideation, the process of setting a project aim and its objectives as well as methodology choice, test plan creation and an investigation into a style and theme for the application developed.

## Chapter 4: Implementation

Chapter 4: Implementation describes in detail the development of the application presented in this report, the chapter starts with an explanation on the implementation of the project methodology, this is followed by a report on the development of the application which contains a system overview, justification for the tools used during development and an explanation of the key features of the application. The chapter is closed with a section on the user testing conducted during the project.

## Chapter 5: Results

The results chapter compares the developed solution described in the previous chapter with several metrics to test whether the projects aims had been met as determined in Chapter 3: New Ideas.

## Chapter 6: Conclusions

The closing chapter in this report provides a summary of the results from the previous chapter, building upon whether the projects aim has been met, Chapter 6: Conclusions looks at the solution in the wider context of the scientific community. The Professional, Social, Ethical and Legal issues of the project are also considered in this chapter, finally looking ahead, the concluding section in this chapter explores the future work made possible due to this project.

# References

Vandewater, E., Shim, M. and Caplovitz, A. (2004). Linking obesity and activity level with children's television and video game use. Journal of Adolescence, 27(1), pp.71-85.