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**AN EXPLORATORY STUDY INTO THE RELATIONSHIP
BETWEEN PHYSICAL ACTIVITY AND PRESENTEEISM IN
THE IRISH WORKFORCE**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS IN HUMAN RESORUCE
MANAGEMENT**

At

National College of Ireland

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Dublin 1

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Submitted to the National College of Ireland, May 2021

Abstract

This research study explores the relationship between physical activity and presenteeism. In doing this it explores workplace wellness programmes and initiatives to see if creating a culture change, that engrains a healthy lifestyle as part of everyday practice, is what is necessary in order to be successful at combatting presenteeism. According to Waterworth *et al.* (2018) a culture that focuses more on productivity than health and wellbeing is a barrier to employee's participation in workplace health promotion initiatives.

This research also looks at the benefits of participating in physical activity to see if this has any impact on employee's performance. Recent research shows that the benefits of physical activity are greater than just illness prevention. In a report published by the U.S. Department of Health and Human Services (HHS), entitled the 2018 Physical Activity Guidelines Advisory Committee Scientific Report, it finds that the benefits associated with being physical activity go way beyond disease prevention. They state that physical activity also provides benefits that help a person to feel better and perform daily tasks more easily (PAGAC, 2018).

This research also looks at ways of helping employees to look after their mental health in the workplace. Biddle (2003) points out that physical activity can enhance an individual's perception of themselves and this can help in the prevention of mental health illnesses and stress, which is abundant in workplaces today. An Economic and Social Research Institute (ESRI) study found that job related stress levels doubled between 2010 and 2015, and now stand at 17% (Russell *et al.*, 2018).

The key finding was that there was not sufficient evidence to suggest that there is a difference between the levels of presenteeism in employees that are regularly physically active versus those that are not.

The link between the amounts of physical activity an employee part takes in and the rate of presenteeism that they experience may not have been strong enough to produce any sufficient finding but this study shows that physical activity is shown to be beneficial in other ways. Employees have stated that it helps them to restress and

care for their mental wellbeing. It is also widely proven to be beneficial to your physical and overall health. Therefore, employers should still consider physical activity to be an important activity that should be encouraged and supported.

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I would like to dedicate this to all the hard-working people who kept our country going during this difficult year.

Research Students Declaration Form

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National College of Ireland

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LIST OF ABBREVIATIONS

MPAM-R	Revised Motives for Physical Activity Measure Questionnaire
HPQ	The Health and Work performance Questionnaire
EWCS	The 5 th European Working Conditions Survey 2010
WHO	The World Health Organisation
US	The United States of America
CDC	The Center for Disease Control and Prevention
PwC	Price Waterhouse Coopers
PA	Physical Activity

Chapter 1: Introduction

This research investigates the relationship between physical activity and presenteeism. It examines previous research in the area and identifies opportunities for further investigation.

Many previous studies discovered that presenteeism is difficult to measure (Marshall (2004), White *et al.*, (2016)). Therefore, although the link between an increase in physical activity and a reduction in presenteeism is favourable, much of the findings are anecdotal. Given this further exploration of this topic seems worthwhile.

Also, previous research on this topic has been explored and shows that very little research has been found that focuses on Ireland and the Irish workforce. As each country has its own unique obstacles and cultures in the workforce, this gap highlights the importance of conducting this research.

This study investigates the relationship between physical activity and presenteeism. In particular the study investigates whether employers should consider the lack of physical activity in its workforce as a contributor to presenteeism. According to Ding *et al.* (2017) as well as causing a global public health problem, inactivity is having a huge impact on the global economy due to health expenditure and loss in productivity.

Presenteeism is often a hidden cost. According to Ammendolia *et al.* (2016) the economic costs related to presenteeism exceed those of absenteeism. According to Evans-Lacko and Knapp (2016) the cost associated with presenteeism tend to be 5-10 times higher than those associated with absenteeism. Yet only 30 % of large companies are investing in wellness policies and initiatives in order to tackle this issue.

But the employers who are becoming aware of the cost of presenteeism are now putting more time and effort into the development of workplace wellness initiatives (Ammendolia *et al.*, 2016). These health promotion strategies are developed with the aim of improving the health behaviours of employees and reducing unhealthy

lifestyle practices (Waterworth *et al.*, 2016). And in doing this they aim to increase productivity and improve the work environment.

Through research it was discovered that workplace wellness initiatives tended to focus primarily on stress management and healthy eating, with physical activity being left aside. Research by Warden *et al.* (2008) states that in order to increase your energy supply you need to expel energy, by being active. It suggests that when you have a healthy heart and lungs that you have more energy for life. Therefore, for the purpose of this research the focus will be on physical activity, to look to see if this, as part of a wellness programme, is affective as reducing presenteeism.

1.1 Research Methodology

Quantitative research in the form of a self-administered questionnaire was used in order to gain a broad range of results across the whole working population in Ireland. The questionnaire also allowed the researcher to examine smaller differences that develop from the responses while always providing a consistent method of approach for assessing these differences. This was highlighted by Bryman and Bell (2015) as being a clear advantage.

The author used a mixture of four different pre-validated questionnaires to make up the final questionnaire. The International Physical Activity Questionnaire (short form), The revised Motives for Physical Activity Measure (MPAM-R) questionnaire, The Health and Work performance Questionnaire (HPQ) and The 5th European Working Conditions Survey 2010 (EWCS).

1.2 Analysis

The online survey tool Demographix was used to both, create the questionnaire and for respondents to complete the questionnaire. The data was then exported into excel. Here the data was cleaned and coded so that accurate analysis could commence. This data was then exported into SPSS where it was analysed in great detail.

Key areas of research were analysed based on demographics. These areas included absolute presenteeism, relative presenteeism, vigorous physical activity, moderate physical active and walking. Analysis also took place based on self-regulation and mental health.

Lastly two multiple linear regression models were constructed to assess if there was a relationship between absolute presenteeism and relative presenteeism and the three different types of Physical Activity.

1.3 Findings

The key finding from this research was that there was not sufficient evidence to suggest that there is a difference between the levels of presenteeism in employees that are regularly physically active versus those that are not.

Chapter 2: Literature Review

2.1 Introduction

The chapter will review literature written on the topics of Physical Activity and Presenteeism and the relationship between them. Before researching such a broad area, physical activity and presenteeism will be defined. Research to examine if there are any benefits to the employer in promoting physical activity in the workplace will also be investigated. In doing this the use of wellness initiatives will be investigated.

By identifying gaps it is anticipated that this chapter will provide rationale for conducting research in this area. The reasons why this topic is worthy of research will be detailed.

2.2 Definition of Physical Activity

The definition of physical activity according to WHO is any bodily movement produced by skeletal muscles that requires energy expenditure (WHO, 2018). Using this definition it should be noted that there is a difference between exercise and physical activity. While exercise is a deliberate and planned movement of the body, physical activity includes any activity that causes the body to move, for example doing chores. This definition is highlighted in order to emphasize the many ways that employers can encourage its workforce to be physically active, without the need for expensive gyms and fitness classes. They can encourage the use of sit/stand desks, hold walking meetings, promote the use of stairs rather than the elevator, put the coffee machine a distance away from offices. For small companies or public sector organisations that do not have the resources to invest in elaborate physical activity initiatives these are all simple ways of increasing physical activity in the workplace.

Having said this, according to Stampfer *et al.* (2000) the more intensive the exercise the more health benefits that are associated with it. Swain and Franklin (2006) state that exercise performed at a more vigorous intensity gives greater cardio protective benefits than exercise performed at a moderate rate. The WHO recommend that

throughout the week adults should be doing at least 150 minutes of moderate-intensity physical activity ,or 75 minutes of vigorous-intensity physical activity (WHO, 2018). But for additional health benefits they recommend up to 300 minutes of moderate-intensity physical activity.

2.3 Definition of Presenteeism

Cary Cooper, a professor of Organisational Psychology, was one of the first people to talk about presenteeism. He described presenteeism as, when someone is at work but is not performing at their best due to a medical issue or illness. Whereas Chapman (2005) describes presenteeism as the ‘measurable extent to which health symptoms, conditions and diseases adversely affect the work productivity of individuals who choose to remain at work’ (Brown *et al.*, 2011). Chapman included the measurable nature of presenteeism in his definition. For the purpose of this study the definition used by human resource professionals will be used. They describe presenteeism as the less than optimal work performance as a result of an illness or other personal issues (Merrill *et al.*, 2012). This definition was chosen as it extends the description to include factors other than health issues, for example family circumstances. Factors such as this can have a huge impact on an employee’s concentration and accomplishment. According to Astengo (2017) presenteeism negatively influences the overall work environment by causing a vicious cycle of lost productivity.

2.4 Why this Topic is Worthy of Research

Investigation took place as to why this study was worthy of research. In this research it was discovered that there was a strong link between both physical activity and health and health and productivity, but that the link between physical health and presenteeism was not as clear.

It is important to note that little research has been found that focuses on Ireland and the Irish workforce. As each country presents its own unique issues, this gap

highlights the importance of conducting this research. It was discovered that there is clearly geographical bias when it comes to research on presenteeism. Much of the research about presenteeism has been carried out in Canada, US, Australia and Scandinavia with little having been carried out in Europe, Africa and Asia.

2.5 Physical Activity and Health

There is much evidence that establishes links between physical activity and health. This evidence dates back many years to Plato, the ancient philosopher who noted that the “Lack of activity destroys the good condition of every human being while movement and methodical physical exercise save it and preserve it” (European Food Information Council, 2015). More recently the WHO published the ‘Global Recommendations on Physical Activity for Health’ in 2010; in this they highlight the need to increase physical activity globally in order to reduce noncommunicable diseases (WHO, 2018). This research shows that the lack of physical activity has become a global concern.

Lee *et al.* (2012) indicates that people who are physically active are less likely to develop chronic illnesses compared to people who are inactive. Physical activity has been shown to improve cardiovascular function, bone health and blood sugar regulation among other things. These in turn help to prevent numerous seriously ill conditions such as cancer, diabetes, cardiovascular disease and obesity (Ding *et al.*, 2017). This is why The Center for Disease Control and Prevention (CDC) identified the lack of physical activity as one of the major modifiable health risk factors known to cause chronic disease (<https://www.cdc.gov/physicalactivity/>).

2.6 Health and Productivity

There is also evidence to support the link between health and productivity. According to Cancelliere *et al.* (2011) maintaining a healthy and productive workforce is becoming more challenging due to the aging workforce and the increase in the number of people suffering from chronic health conditions. Price Waterhouse Coopers (2018) produced a collaborative report, ‘The Future of Workplace Health’,

and in this they state that high levels of chronic disease and an aging population are affecting workplace health.

Other PwC research found that productivity losses associated with workers who have chronic diseases are as much as 400% more than the costs of treating the chronic diseases (PwC, 2014). These trends highlight the importance of shifting focus away from just managing chronic health conditions and instead focusing on preventative measures.

Research undertaken by The Work Foundation (2010) found that there was a relationship between presenteeism and performance. They concluded that concentrating on improving general wellbeing amongst employee's in turn decreased absenteeism and presenteeism (Ashby and Mahdon, 2010).

The WHO (2013) recognises that there is strong evidence to suggest that worksite programmes that are aimed at promoting physical wellbeing are beneficial to employers. Research conducted in the US in 2007 showed that originally employers were focusing on employee's physical wellbeing because of the cost savings associated with healthcare expenditure. These savings are highlighted in the US because employers in the United States are required to pay much of the direct cost (World Economic Forum, 2007). However, in more recent years employers are realising that the benefits of focusing on their employee's physical activity extend beyond this. The link between being physically and mentally fit and being productive is becoming clearer (PwC, 2014).

One of the first bodies of research that identifies a clear link between health and productivity is a research study undertaken by the Vielif/ IHPM Health and Performance (Griffiths, Maggs & George, 2007). In this research they find that health promotion programmes improve employees health and quality of life while also improving their performance at work by 8.5% (Vielif/ IHPM Health and Performance Research Study, 2005).

2.7 Physical Activity and Presenteeism

Historically the link between physical activity and employee presenteeism tends to be anecdotal. It is lacking in clarity. Therefore further exploration of this topic seems worthwhile. Marshall (2004) discusses the challenges and opportunities that arise from trying to promote physical activity in the workplace. He, along with many others (Proper *et al.*, 2002), point out that the scientific evidence to prove the effectiveness of physical activity in the workplace is very limited. He also points out that the evidence that does exist may be biased seeing as the people who tend to participate in the research are already motivated, active people.

Other research by White *et al* (2016) shows similar findings. They looked at the impact of workplace initiatives that involve physical activity on absenteeism, productivity and finances. They discovered that simple, less costly physical activity was just as effective at reducing absenteeism as more complex exercise initiatives. This finding is important, especially when discussing companies that would not have a budget for costly initiatives, for example the public sector. Although a gap in this research is that they neglected to look at presenteeism, which is highly prevalent and costly to companies.

However, research undertaken by Sjogaard *et al.* (2016), where they introduced time for employees to partake in physical activity during the working day, concluded that physical exercise at work does in fact benefit both the employee and the employer. In their research they discovered that employees saw improvements in their physical capacity and functions as well as a decrease in health risk indicators. They also highlighted that by providing the time for employees to participate in physical activity in the workplace employers saw a decrease in absenteeism and presenteeism, measured by the increase in productivity and work ability.

2.8 Presenteeism and its relationship to Absenteeism

In 2010 IBEC published a report 'Employee Absenteeism - A Guide to Managing Absence' and in this report they stated that absences are costing Irish businesses an average of €818 per employee per year. They believe that the introduction of

workplace health and wellbeing supports, such as back to work interviews can reduce these absenteeism levels because they provide support to ill employees (IBEC, 2010). Contrary to this, Garrow (2016) believes that absence control policies such as these can actually lead to an increase in presenteeism and long term health problems. Garrow argues that return to work interviews, reduction in pay and absence scores can deter people from staying at home when they are feeling un-well (Garrow, 2016). Taylor et al (2003) and Chatterji and Tilley (2002) found that many policies that were implemented with the purpose of reducing absenteeism were found to increase presenteeism. Employees do not want any unnecessary attention on their illness therefore they continue to attend work when they are unwell. They believe that this phenomenon can lead to more prolonged illness and a decrease in productivity as recovery takes longer.

2.9 Presenteeism and Demographics

WHO recognises that the lack of physical exercise is one of the largest risk factors associated with premature deaths (WHO,2018). According to Lee *et al.* (2012) more than 5 million premature deaths, associated with physical inactivity, occur each year. As well as causing a global public health problem, this inactivity is having a huge impact on the global economy due to health expenditure and loss in productivity (Ding *et al.*, 2017). These statistics highlight the need for employers to prioritise the health and wellness of their workforce. This can both benefit the company as well as the individual. Coulson, McKenna and Field (2008) conducted research to look at how employees self-report their performance on days when they participate in workplace exercise and on days when they do not participate. This research concluded that participating in exercise resulted in a significant improvement in employee's mood and performance; it led to stronger working relationships and generated better resilience in its employees. Although a potential gap in this research is that the participants in the research were all from similar industries, neglecting a wider variety of workers.

WHO estimates that globally, approximately 23 % of the population are inactive. But this prevalence rate varies across country. The percentage is higher in high income countries with 26% of men and 35% of women being inactive (WHO, 2018).

Some of the reasons for the higher rates in high income countries are due to the fact that jobs are more sedentary and mode of transport is more passive. But according to WHO in these high income countries the rate of inactivity is continuing to rise over time.

Schultz, Chen and Edington (2009) also conducted research in this area, concentrating on the cost and impact of presenteeism and they argue that the rate of presenteeism is heavily linked to the demographics of the group. Findings showed that rates of presenteeism differed between class and position in the social structure. Those at the lower end of the social structure do not have the privilege of staying home from work when they are not mentally or physically well. This is due to a number of factors, they do not want to risk losing their job or they cannot afford to take sick leave that is unpaid. Therefore their rates of presenteeism are higher. While those who are more affluent have the privilege of being able to take absences when needed and therefore tend to work when they are feeling well, and therefore rates of presenteeism are lower.

Dew *et al.*, (2005) also discovered in his research that there is a variation in working through illness by gender and age, finding that older men and women reported higher levels of presenteeism. This was explained as being because the older generation are more likely to have more chronic health conditions.

However it is important to note that not all stereotypes are true. This was seen in a study done by Bekker *et al.* (2016) where they looked at the rates of burnout and sickness presenteeism across genders in the nursing profession. In this study they took into account gender-relevant variables such as childcare obligations and job characteristics. They expected to see the rates of presenteeism as being highest in females due to emotional exhaustion but this was not the case. Women did not have higher rates of sickness presenteeism and absenteeism than men.

Ireland is one of the countries with high levels of inactivity and therefore it needs to take action to tackle this issue. Ireland also has an aging workforce and according to Aiyar and Ebeke (2017) the number of workers aged over 55 is going to increase considerably over the next decade. It is estimated that by 2041 one third of the Irish population will be aged 60 and over (CARDI 2015). Research shows that with an aging workforce employees are more likely to have chronic health conditions and

this can lead to significant hidden costs to employers in terms of presenteeism and lack of productivity (Cancelliere *et al.*, 2011).

In research by Sjogaard *et al.* (2016) they discovered that encouraging physical activity in the workplace improved ordinary daily physical functions of its older employees, such as walking and moving. This research identifies the need for employers to think about preventative measures as this could prove very cost effective in the long run.

These statistics highlight the need for employers to prioritise the health and wellness of their workforce, which can both benefit the company as well as the individual.

2.10 The Benefits of Having a Physically Active Workforce for an Employer

According to Dishman *et al.* (1998) the main rationale for promoting physical activity in the workplace is that exercisers are seen as healthier than non-exercisers and therefore they will contribute to a reduction in costs associated with health care for the employer.

In 2002, Proper *et al.* conducted a systematic review on the effectiveness of physical activity programmes at the workplace with respect to productivity but found no evidence of an effect (Proper *et al.*, 2002). Although a gap in this research is that Proper *et al.* neglected to look at all the elements that may benefit from physical activity, such as stress levels, inter personal relationships, mood and emotions. More recent research shows that the benefits of physical activity are greater than just illness prevention. In a report published by the U.S. Department of Health and Human Services (HHS), entitled the 2018 Physical Activity Guidelines Advisory Committee Scientific Report, it finds that the benefits associated with being physical activity go way beyond disease prevention. They state that physical activity also provides benefits that help a person to feel better and perform daily tasks more easily (PAGAC, 2018).

This report explains that even a single episode of physical activity can have an immediate effective on a person's executive function. It improves the function in the brain that allows a person to organise and plan more easily. It also helps memory,

academic performance, attention span and the control of emotions. Therefore, this research shows that a person will be more alert and productive on the days that they are physically active. Coulson *et al.* (2008) conducted a study that shows similar findings. These findings suggest that employee's tolerance and resilience were increased on days where they were physically active.

Carless and Faulkner's (2003) research support this theory stating that physical activity can elevate mood levels. Biddle (2003) points out that physical activity can enhance an individual's perception of themselves and this can help in the prevention of mental health illnesses and stress, which is abundant in workplaces today. An Economic and Social Research Institute (ESRI) study found that job related stress levels doubled between 2010 and 2015, and now stand at 17% (Russell *et al.*, 2018).

2.11 Wellness Initiatives

Presenteeism is often a hidden cost. According to Ammendolia *et al.* (2016) the economic costs related to presenteeism exceed those of absenteeism and employer health cost. According to Evans-Lacko and Knapp (2016) the cost associated with presenteeism tend to be 5-10 times higher than those associated with absenteeism. This is due to the fact that unlike absenteeism, presenteeism is not always apparent. Illnesses or medical conditions can be hindering employees performance for long periods of time without the employer being aware of it. Yet only 30 % of large companies invest in wellness policies and initiatives in order to tackle this issue. And in small to medium sized companies this goes down to 6% (Evan-Lacko and Knapp, 2016).

But the employers who are becoming aware of the cost of presenteeism are now putting more time and effort into the development of workplace wellness initiatives (Ammendolia *et al.*, 2016). These health promotion strategies are developed with the aim of improving the health behaviours of employees and reducing unhealthy lifestyle practices (Waterworth *et al.*, 2016). And in doing this they aim to increase productivity and improve the work environment.

Workplace wellness programmes can consist of a variety of initiatives. Some of them may include healthy eating policies, smoke free and alcohol free campuses, health education seminars, physical activity groups and stress management workshops. Through research it was shown that most workplace wellness initiatives concentrated more on once off workshops or week/month long initiatives rather than creating a culture change that engrains healthy lifestyle as part of everyday work. According to Waterworth *et al.* (2018) a culture that focuses more on productivity than health and wellbeing is a barrier to employee's participation in workplace health promotion initiatives.

Research also showed that workplace wellness initiatives tend to focus primarily on stress management and healthy eating, with physical activity being left aside. Research by Engbers *et al.* (2005) found that employers who adopted work place wellness programmes mainly concentrated on nutrition behavioural changes and neglected physical activity behaviours.

Therefore, for the purpose of this research, concentration will be on physical activity to look and see if this, as part of a wellness programme, is affective as reducing presenteeism.

2.12 What Employees are looking for in the Workplace

A recent Well-Being Survey conducted by Cigna 360 in 2019 discovered that people are working harder than ever before and that this is negatively impacting on their physical well-being and quality time for their hobbies and friends. It also showed that employees who stated that they were unable to manage their stress were generally less physically fit and less sociable (Cignaglobal.com).

According to Russell *et al* (2018) 73% of millennials admitted that a good workplace wellness programme would sway them when considering potential employers. This is why the Healthy Directions and Wellness Program at Pfizer was designed to help to attract, develop and retain its talented employee population (Bruno, 2005).

Other research conducted by The Health Enhancement Research Organisation reported that employees were 123 per cent more likely to have high rates of

presenteeism if they felt that their employer had no interest in encouraging them to be more physically active (HERO,2013).

2.13 Self - Regulation

Physical activity as a function in everyday life has been reduced dramatically because of technological and societal evolution (Conroy et al., 2010). On average a person sits for more than 300 minutes in a day (Bauman et al., 2011). Researchers such as Schutzer and Graves (2004) and Buckworth et al. (2013) have been trying to identify what motivates people to be more physically active and less sedentary.

According to Mokdad *et al.* (2001) seldom are these lifestyle choices adapted with enough consistency to derive the potential health benefits. This highlights the question of self-regulation and the motivation around the engagement in physical activity. There is a need to explore the reasons why people perform physical activity and what motivates them to do this so that we can use this information to design workplace wellness initiatives that will encourage employees to continue and expand their physical activity. It is proven that it takes many years or even decades of positive healthy behaviours in order to prevent the onset of chronic diseases later in life. Therefore employers need to act fast.

Research proves that health behaviour is dependent on self-regulation capacities (De Ridder and de Wit, 2006). According to De Bruin *et al.* (2012) people who have great self-regulation capacity are more successful at seeing through their intentions to carry out physical activity. Employers should note this as employees with low self-regulation capacity may need more environmental restructuring and social reinforcement to facilitate a change in their behaviour (Mokdad et al., 2001).

2.14 Conclusion

This literature review has highlighted why this study was worthy of research. In this research it was discovered that there was a strong link between both physical activity

and health and health and productivity, but that the link between physical health and presenteeism was not as clear.

Little research has been found that focuses on Ireland and the Irish workforce. As each country presents its own unique issues, this gap highlights the importance of conducting this research. It was discovered that there is clearly geographical bias when it comes to research on presenteeism. Much of the research about presenteeism has been carried out in Canada, US, Australia and Scandinavia with little having been carried out in Europe, Africa and Asia.

Chapter 3: The Research Aims and Objectives

In this chapter the author will outline the aims and objectives of the dissertation.

The broad research question revolves around the relationship between physical activity and presenteeism and whether more emphasis should be put on physical activity in order to combat the high levels of presenteeism in the Irish workforce.

The exact title of the dissertation is:

‘An exploration into the relationship between physical activity and presenteeism in the Irish Workforce’

From the research shown in the literature review this dissertation aims to explore more deeply the relationship between physical activity and presenteeism, with the hope that findings from this research will add to existing work. In particular this research would like to explore the relationship between physical activity and presenteeism from an Irish perspective. Secondary data, as discussed in the literature review, highlights the lack of research in this area in Ireland.

The author will also investigate if employees themselves recognise the benefits that physical activity has on their presenteeism.

The author will investigate if a culture change is necessary in order to be more encouraging of physical activity in the workplace? Do companies need to adapt their wellness initiatives to take into account presenteeism in a changing workforce?

3.1 Research Objectives

The research objectives are as follows:

1. To identify if there is any significant relationship between the gender of the worker and the rates of presenteeism.
2. To identify if there is any significant relationship between the age of the worker and the rates of presenteeism.

3. To identify if there is a significant relationship between partaking in physical activity during the working day and the level of presenteeism an employee experiences.
4. To identify if there is a significant relation between walking and age and gender.
5. To identify if employees go to work when feeling mentally unwell and to identify if employees feel that their workplace has any impact on their mental health
6. To identify if employees use physical activity to help them to maintain their mental health
7. To identify if employees place any value on having a workplace that encourages and supports physical activity and if employers, themselves, would also benefit from encouraging and supporting physical activity in the workplace.
8. To identify if there is any significant relationship between the level of physical activity an employee part takes in and the level of presenteeism that they experience.

3.2 Hypothesis

The null hypothesis in this research is that there is no difference between the levels of presenteeism in employees that are regularly physically active versus employees that are not. The alternative hypothesis is that the levels of presenteeism reduce the more physically active the employee carries out.

Chapter 4: Research Methodology

4.1 Introduction

Quinlan (2011) highlights the importance of fit throughout research. According to Saunders *et al* (2015) in order to create meaningful results research must possess the following:

- The systematic collection of data
- The systematic interpretation of data
- A clear purpose

This chapter endeavours to explain the methodology chosen for this research. It will begin with an outline of the theoretical philosophies as a framework for the chapter. It will include a demonstration about how the research was designed and explain the reasoning behind this design. As the research wishes to engage a large population an instrument was designed that would allow for a wide-ranging approach to studying presenteeism and its relationship to physical activity (Quinlan, 2011). This research is developed using a quantitative, cross-sectional self-administered questionnaire methodology (Bryman and Bell, 2015).

The sample techniques are explored and the rationale behind the sample size is explained. Because this research is attempting to gain an understanding into the behaviours of the whole of the Irish working population, across a broad range of industry sectors, the sample size has to be as big as possible. Due to time constraints an in-depth look into this sample size would not have been possible.

This chapter concludes with a reflection on research limitations.

4.2 Research Philosophies

Easterby-Smith *et al* (2012) emphasises the importance of researching the philosophies behind research methodology prior to conducting research. They point out that by evaluating the various methods of research it should minimise the

chances of the researcher choosing an inappropriate method that would cause limitations to their research.

Proctor (1998) agrees and recommends that all research explore the differences between positivism and post-positivism before committing to a research method. Quantitative research is generally associated with philosophical traditions of positivism while qualitative research is associated with philosophical traditions of interpretivism (Polit et al 2010). According to Fisher and Buglear (2010) the use of positivism is intended to be for the purpose of producing general laws that can then be used to predict probable behaviours. Smith (1998) explains that these laws then allow the researcher to study social objects in much the same way as research is carried out on natural objects. According to Ayer a criticism of the positivist approach is that it is not possible to generalise the 'nature of men' (Howell, 2012). That human behaviours need to be explored, in a more in-depth way, in order to have a true understanding of them (Crossan, 2003).

Interpretivism, however, is concerned with an exploration of the subject matter with the aim of gaining a deeper understanding of the subject. Interpretivism recognises the intricate relationship between individual behaviours, attitudes and socio-cultural issues. A criticism of the interpretive approach is that it may not be reproducible as the research is very personal to the researcher. Therefore other researchers may come to a very different conclusion (Crossan, 2003).

This dissertation is taking the positivist approach as it aims to research a specific research topic where there is a relationship expressed between two variables, physical activity and presenteeism. A positivist framework adopts a quantitative approach which looks at scientifically measuring variables which is what the researcher aims to do (Quinlan, 2011). The researcher will create hypotheses using existing research. These hypotheses will focus the researcher on the aims and objectives of the research. The aim will be to get data that can be quantified and statistically evaluated.

A deductive research approach will be taken where, according to Saunders *et al* (2015), the hypotheses that were created in this research is tested in order to develop an understanding into the results. And then a validation is made in order to accept or request the hypotheses.

It is important that the research approach closely underpins the research design of the study.

4.3 Research Design

The research design process involves the selection of an appropriate design frame that will support the research approach and help to identify an appropriate sample for the research.

Direct measures of presenteeism are difficult to measure, especially if the work does not involve tasks that can be easily measured (Brown *et al.*, 2011). Therefore indirect measures will be used for the purpose of this study.

The researcher's quantitative methodology will be in the form of a questionnaire. Self-administered questionnaires were chosen as focus groups or in depth interviews would not successfully gain a broad range of results across the whole working population in Ireland. Whereas, using questionnaires, allowed the research to reach a larger range of industry sectors and geographical areas. It also allowed for the examination of smaller differences that develop from the responses while always providing a consistent method of approach for assessing these differences. This was highlighted by Bryman and Bell (2015) as being a clear advantage.

According to Saunders *et al.* (2009) self-administered questionnaires are highly efficient as all participants are asked the same set of questions in the same way; therefore there are no interviewer biases. They also allow the participant to respond in private and at a time that suited them best therefore they could be more inclined to be honest in their responses. The questionnaire was designed to be anonymous with the intention of encouraging participants to be as open as possible in their answers.

Participants were not made aware of the study in advance of receiving the email containing the link to the questionnaire. This decision was made in order to prevent behavioural changes in the participants in the time leading up to their participation. It was also intended to minimise any bias to the results as the participants did not have any impulse to answer the questions in a way that does not reflect the full truth.

4.4 Structured Versus Unstructured Research Methods

There are unstructured approaches to research and structured approaches.

Unstructured approaches have open ended questions. These are generally used when the researcher does not have an anticipated answer to the questions that he is asking. Although focus groups and interviews can be structured by using a Delphi technique or keeping to a script, they tend to be unstructured. (Fisher *et al.*,2010)

On the other hand a structured approach to research, such as questionnaires and surveys, tend to have closed, pre coded questions. This approach is generally used when the researcher has a pre conceived idea of what the answers are going to be but he would like to know more about the frequency at which the various answers appear (Fisher and Buglear, 2010). Having said this, it is also possible for surveys and questionnaires to be unstructured by giving the respondent plenty of free text space to answer open questions.

According to Fisher and Buglear (2010) researchers who take on a survey approach to research, like this piece of research, should adapt a structured approach. They believe that in order to categorise the subjects of the study accurately the researcher should define the characteristics and properties of the subjects of their study before the research is carried out.

For the purpose of this dissertation a structured approach will be taken as with the large sample size, in order to compare the experiences of many, a pre coded approach would produce more accurate data.

4.5 The Questionnaire Design

The questionnaire begins with a brief introduction explaining the purpose of the research and highlighting the confidentiality of the questionnaire. The researchers contact details were provided and respondents were encouraged to make contact if they had any questions. Before completing the questionnaire the respondents were asked to give their consent to participating in the research.

A mix of four different pre validated questionnaires were used to make up the final questionnaire.

The first pre validated questionnaire that was used was the International Physical Activity Questionnaire (short form). This was developed for the purpose of measuring physical activity. This questionnaire was tested for validity and reliability across 12 countries in 2000 and concluded that it was an acceptable form of measurement of physical activity in a variety of settings and languages (Hagstromer *et al.*, 2006). The researcher chose this questionnaire as it was a good basis for finding out the level of physical activity that the respondent undertakes. This data can then be compared with the data received from the questionnaire in relation to levels of presenteeism.

The revised Motives for Physical Activity Measure (MPAM-R) questionnaire was also included. This questionnaire was designed to predict behavioural outcomes and also to predict mental health and well-being (Ryan *et al.*, 2009) and was proven to be reliable and valid by Frederick *et al.* (1993). The researcher included this section in the questionnaire as it provides data in relation to the relationship the respondents have with physical activity. By including this Likert scale it allows the research to get an understanding into what aspects of carrying out physical activity are most important to the respondents. This data could be valuable to an employer who is developing wellness initiatives that involve physical activity as it would arm them with knowledge about the intrinsic motivations of its employees.

WHO produced a questionnaire called the Health and Work performance Questionnaire (HPQ). They developed the HPQ questionnaire with the purpose of gathering information about the human capital costs of illness and the cost effectiveness of diverse health care interventions. Within this questionnaire there is a specific section that is validated for use when measuring presenteeism and absenteeism. This section of the questionnaire was designed to obtain data on self-reported levels of presenteeism. The researcher acknowledges the limitations to gathering information on levels of presenteeism based on self-reporting however this questionnaire has been validated by many researchers (Kessler *et al.*, 2003). Scuffham *et al.* (2014) also conducted research to examine the validity of the HPQ questionnaire to measure presenteeism across various workplace settings and

concluded that it is a reliable tool. Other self-reported questionnaires that were developed to measure work performance are the Endicott Work productivity Scale (Endicott et al., 1997), the Stanford Presenteeism Scale (Koopman et al., 2002), and the Work Limitations Questionnaire (Lerner et al., 2001), but none of these have been validated to guarantee unbiased coverage across occupations.

The final section of the questionnaire was taken from the 5th European Working Conditions Survey 2010 (EWCS). This survey was originally launched in 1990 and it continues to be carried out every five years. It is used to identify major risk factors in working conditions across Europe and to highlight policies that need attention (Parent-Thirion et al., 2012). Two questions from this questionnaire were included as they provide supporting data for the data on presenteeism, focusing more on mental health reasons for presenteeism. As levels of mental health have been increasing in recent years this area features heavily in this research. According to the 5th European Working Conditions Survey that was carried out in 2010 20 % of workers reported poor mental well-being (Europe, 2010). And an Economic and Social Research Institute (ESRI) study found that job related stress levels doubled between 2010 and 2015, and now stand at 17% (Russell *et al.*, 2018).

4.6 Tool

The online survey tool Demographix was used to create the questionnaire. Although there are many online survey tools available, Demographix was chosen as it is held in high regard by data analysts and epidemiologists because of its reliability and functionality. It is also a very secure site which ensures that data protection laws are being adhered to.

Once the survey has been created and finalised this tool automatically generates a survey link. The link was forwarded to potential respondents by email and text message. In order to fill out the questionnaire all the respondent needed to do was click on the link. All responses are then recorded on this tool.

4.7 Sampling

When considering sampling techniques Saunders *et al.* (2009) points out that it is just as important to consider the feasibility and practicality of data collection as it is the research question and objective.

Probability sampling is the most accurate form of sampling according to Fisher and Buglear (2010), because it gives all elements of the population an equal chance of being included in the sample and therefore it should be a fair representation of the population. Given that this research is based around your working life using probability sampling would mean that a fair sample would have to be taken of the current workforce in Ireland. This currently stands at 2,300,000 ([Statista.com](https://www.statista.com), 2020). This type of sampling is very time consuming and therefore it was not within the scope of this research project. Instead, a non-probability sampling technique called convenience sampling and snowball sampling was chosen (Creswell, 2017). This form of sampling produced results that are not representative of the entire population as there was not an equal amount of respondents in each age group category therefore the results cannot be considered random.

Although some authors discount convenience sampling as being the least reliable design method due to its inability to ensure precision (Bryman and Bell, 2015), others believe that it can produce beneficial data when examining topics of interest. According to Quinlan (2011) convenience sampling can be used effectively by using a relatively small sample to visibly exemplify the phenomenon under investigation.

In conclusion the author accepts these limitations and intends for the results to be a representation of the sample and not of the working population as a whole. And any generalisations will be made based on the theory and not the populations (Saunders *et al.*, 2015)

4.8 Sample Size

Convenience sampling was used by emailing and texting a message containing a link to the questionnaire to colleagues, fellow students, friends and family. In order to

complete the questionnaire and to be considered a valid respondent the individual must be currently employed and working in Ireland.

As this did not generate a sufficient number of responses the same group of people were asked to share the questionnaire with their known contacts. This is known as snowball sampling and it generated a random sample of responses.

Given the working population of Ireland is currently 2,300,000, in order to achieve a confidence level of 95%, while allowing for a margin of error of 10%, a sample size of at least 88 must be achieved (SurveyMonkey.com, 2020).

The respondents were given two weeks to respond and the final number of respondents received was 107. Two of these responses were from people who were employed in the UK therefore they were discarded as this research is interested in the Irish workforce. From the valid 105 responses, 60 were female, accounting for 57.1% of overall responses and 45 were male, accounting for the remaining 42.9% of responses. This sample size will help to gain an understanding into the relationship between the level of physical activity an employee part takes in and the level of presenteeism that they experience.

4.9 A Pilot test

A survey test was carried out one week prior to this survey link being circulated. This study was piloted in order to ensure that there was no confusion with the instructions and that the questions were clear and easy to interpret. According to Harrison (2018) testing the questionnaire is important in order to ensure the validity of the questions, the format and the scales of the instrument. Bryman and Bell (2015) also highlight the importance of conducting a pilot study when circulating self-administered questionnaires as any confusion by the respondent during the process cannot be clarified as the researcher will not be present.

The research collected responses from 6 individuals in order to unravel any blind spots that went unnoticed by the researcher. In light of this pilot study the questionnaire was revised to ensure more clarity. Some of the questions were adapted to ensure that the time periods being used were of equal value. This is

necessary for accurate analyses. Horn (2012) highlights the importance of considering analyses when constructing your questionnaire.

The results of these responses were not included in the analysis.

4.10 Ethical Considerations

According to Quinlan (2011) ethics is seen as a process of rational thinking in terms of doing the right thing. Ethics were taken into consideration throughout the entire data collection and data analysis process. The three guiding principles found in the National College of Ireland's 'Ethical Guidelines and Procedures for Research involving Human Participants' were used throughout the research process.

4.10.1 Respect for Persons

Before the participants were able to start the survey they were provided with an introduction which outlined what was involved in participating in the survey. The researchers contact details were also provided and participants were encouraged to make contact if they had any questions.

4.10.2 Beneficence and Non- maleficence

Before the participants could begin they were asked to click on the boxes provided to ensure that they understood the process and to confirm that they were giving their consent to participate in the survey. It was explained to the participants that the data collected would only be used for the purpose of this research and that they could withdraw from the survey at any stage if they did not wish to finish it.

4.10.3 Justice

The online questionnaire was issued using an anonymised link and no personally identifiable information was requested therefore the data collected was completely anonymous. All data was stored securely with only the researcher having access to it.

Therefore this research did not pose any privacy threat to the participants as all ethical standards and protocols were adhered to.

4.11 Measuring Absolute Presenteeism

With respect to the measuring of absolute presenteeism employees were asked to rate their overall work performance on a scale from 0 to 10, where 0 is the worst performance a person could have at this job and 10 is a top performance. According to Kessler *et al.* (2004) this approach was used as it is believed that the employees themselves are better at evaluating their role than a researcher is and therefore they are better equipped to evaluate their performance against others with a similar role.

Presenteeism is conceptualised as a measure of actual performance in relation to possible performance. Simple scoring is the only approach available in the absence of objective benchmark data. 3 items within a scale were designed to give an indication of the performance as a percentage. Absolute presenteeism scoring rule is $10 \times \frac{c}{13}$. Using this calculation absolute presenteeism would have a lower bound of 0 and an upper bound of 100. The lower bound 0 being total lack of performance during your working day and an upper bound of 100 being no lack of performance during your working day.

4.12 Measuring Relative Presenteeism

Relative Presenteeism is the ratio of actual performance to the performance of most other workers in the same job. It was recommended by Kessler *et al.*(2004) that when calculating this that you limit the range from 0.25 to 2.0. 0.25 being the worst relative performance (or 25% less than other workers' performance) and 2.0 being the best relative performance (or twice as good as other workers performance) (Alheresh *et al.*, 2017). Therefore relative presenteeism is scored by dividing the actual performance by the performance of most other workers in the same job.

A synthetic bounded recall question was added to the questionnaire, asking how the employee would rate his usual job performance over the past year or two. This question was not designed to be used to calculate presenteeism but instead to focus

the respondents on the following question in the hope of getting more accurate information.

4.13 Self-Regulation

According to McAuley *et al* (2013) usually a combination of intrinsic motivation and external regulation factors encourages individuals towards autonomy which in turn enhanced their self-esteem and overall sense of wellbeing. Erickson *et al.* (2011) agrees, stating that employees who feel confident and autonomous are more likely to perform better and achieve more than their less positive counterparts.

4.14 Exercise Self-Regulation Questionnaire SRQ-E

The questions from the Exercise Self-Regulation Questionnaire were included in the questionnaire in question 7. These questions were used in order to gain an understanding into why employees exercise regularly. By understanding the motivations around why people engage in physical activity it would help employers in the design of workplace wellness initiatives. In order for workplace wellness initiatives to be effective they need to appeal to the employees. Therefore by asking these questions it allows us to get an insight into their way of thinking and get a better understanding of what aspects of wellness are most important to them.

Question 7 is structured in a way that one question is asked but the responses can be grouped into the four main types of self-regulation; external regulation, introjected regulation, identified regulation and intrinsic motivation.

4.15 Demographics

This study focused on the relationship between employee physical activity, their self-regulation and the impact these factors have on overall personal presenteeism. The study consisted of a self-reporting survey. The survey was circulated to 150 employees; of the 150 possible respondents 107 responses were received. Two of these responses were not valid as they didn't meet the criteria of being employed in

the Irish workforce. Therefore 105 responses were used in the analysis. The gender split of the respondents was more heavily weighted towards females, with 60 (57.1%) participants being female versus 45 (42.9%) male. The age of the participants was broken down into 5 categories. Two respondents were aged 18-24 years (1.9%). 14 respondents were ages 25-34 years (13.3%). The majority of respondents were aged 35-44 years, 69 (65.7%). 16 respondents were aged 45-54 years (15.2%) and 4 respondents were ages over 55 years (3.8%). With respect to the respondents employment sector, 73 (69.5%) indicated that they were employed within the Private Sector, with 19 (18.1%) indicating that they were employed within the Public Sector and the remaining 13 (12.4%) being Self- Employed.

4.16 Scale Reliability and Validity Results

4.16.1 Reliability and Validity results for the Presenteeism Scale

The Cronbach Alpha test was also used to validate the Scale used to measure presenteeism. This scale was taken from the World Health Organisation's Health and Work Performance Questionnaire (HPQ). The full version of the HPQ questionnaire is a long survey but this study only included the section that explored presenteeism. Therefore the validity of the presenteeism scale needed to be tested to ensure that it was reliable.

In relation to this study 102 participants were valid out of 105 participants. A 3 item presenteeism scale was used to conduct a Cronbach Alpha Test, resulting in a score of **.756**. Therefore this scale has been proven to be valid and reliable.

4.16.2 Reliability and Validity Results for the Self-Regulation Scale

The Cronbach's Alpha Test measures the internal consistency of a study. This test was used to validate the Self-Regulation Scale (SRQ-E). The Self-Regulation scale was used to explore the reasons why people engage in physical activity, sports and exercise. Although this scale has previously been proven to be reliable the Cronbach's Alpha test was used to ensure that

the version used in this study was valid when taking into account the sample under consideration (Hall *et al.*, 2007).

In relation to this study 103 participants were valid out of 105 participants. A 9 item Self-Regulation Scale was used to conduct a Cronbach Alpha Test, resulting in a score of **.865**. According to Pallant (2002) the Cronbach Alpha coefficient of a scale should be above 0.7 therefore this scale has been proven to be valid and reliable.

Self-Regulation is measured using the Exercise Self-Regulation Questionnaire. These questions are structured in a way that one question is asked but the responses can be grouped into the four main types of self-regulation; Intrinsic Motivation, Identified Regulation, External Regulation and Introjected regulation. These questions were used in order to gain an understanding into why employees exercise regularly.

4.16.3 Intrinsic Motivation

The Cronbach Alpha test was used to validate the scale used to measure Intrinsic Motivation levels. In relation to this study 104 participants were valid out of 105 participants. A 3 item Self-Regulation Scale was used to conduct a Cronbach Alpha Test, resulting in a score of **.882**. Therefore this scale has been proven to be valid and reliable.

4.16.4 Identified Regulation

The Cronbach Alpha test was used to validate the scale used to measure Identified Regulation levels. In relation to this study all 105 participants were valid. A 3 item Self-Regulation Scale was used to conduct a Cronbach Alpha Test, resulting in a score of **.623**. As this score is just under the standard cut off point of 0.7 for a reliable scale therefore this scale has been proven not to be valid and reliable. This may be due to the consistency of responses as this affects the reliability of the scale (Panayides, 2013).

4.16.5 Introjected Regulation

The Cronbach Alpha test was used to validate the scale used to measure Introjected Regulation levels. In relation to this study 104 participants were valid out of 105 participants. A 2 item Self-Regulation Scale was used to conduct a Cronbach Alpha Test, resulting in a score of **.916**. Therefore this scale has been proven to be valid and reliable.

Case Processing Summary

		N	%
Cases	Valid	104	99.0
	Excluded ^a	1	1.0
	Total	105	100.0

a. Listwise deletion based on all variables in the procedure.

Table 1: Case summary of Introjected Regulation Scale

Reliability Statistics

Cronbach's Alpha	N of Items
.916	2

Table 2: Cronbach Alpha Introjected Regulation Scale

4.17 Limitations to this questionnaire

Gosselin, Lemyre and Corneil (2013) point out that presenteeism is harder to remember than absenteeism and that this affects the rate at which it is self-reported by employees. For the purpose of this study it is not necessary to use the full Work performance Questionnaire from the WHO. Instead only the specific questions that can be used to score presenteeism will be included. It was taken into consideration that the full questionnaire produces more accurate data as it is designed to trigger

memories from the respondent. But seeing as presenteeism is only one of the two main areas of research, and that physical activity also needs to be included in the questionnaire, the full survey would be too long and as a result the survey may not be completed in full. Garrow (2016) reviewed the short version of the survey and reports that it is useful in providing a quick assessment of lost work performance in the workplace.

There are also limitations to the question in relation to the number of hours that employer expects you to work in a 28 day period. The researcher is aware that in modern times employers are more concerned with tracking workload rather than the number of hours an employee does. Therefore this question may not reflect this.

There is also an overall age bias in the research, with the large proportion of the respondents being in the age group 35-44 years old (65.7%). This needs to be taken into consideration when doing analysis based on age group.

Chapter 5: Analysis and Findings

5.1 Introduction

The online survey tool Demographix was used to create a questionnaire and for respondents to complete the questionnaire. Once a sufficient number of responses were received the questionnaire was closed so that the data could be analysed. The data was then exported into excel. Here the data was cleaned and coded so that accurate analysis could commence. This data was then exported into SPSS and SPSS was used to analyse the data.

Key areas of research were analysed based on demographics. These areas included absolute presenteeism, relative presenteeism, vigorous physical activity, moderate physical active and walking. Analysis also took place of self-regulation and mental health.

Lastly two multiple linear regression models were constructed to assess if there was a relationship between absolute presenteeism and the three different forms of Physical Activity, and also if there was a relationship between relative presenteeism and the three different forms of physical activity.

5.2 Absolute Presenteeism

5.2.1 Absolute Presenteeism by Gender

When looking at absolute presenteeism between genders the study considered 104 participants, this left only one participant not being valid. Of the 104 participants, 59 (56.1%) were female and 45 (42.9%) were male.

Figure 1 below shows the difference between male and female distributions with respect to absolute presenteeism. The horizontal axis represents the percentage of absolute presenteeism self - reported by the employees and the vertical axis represents the number of males and females representing these percentages of absolute presenteeism. For example, the histogram indicates that more females than males reported no lack of performance during the working day (10 females versus 7 males). Both distributions show a degree of negative skewness.

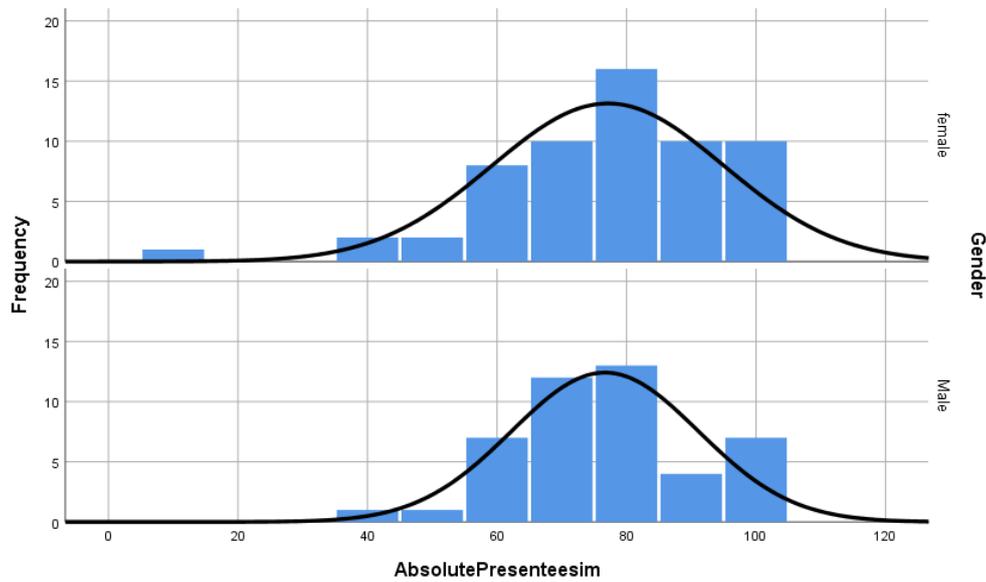


Figure 1: Absolute presenteeism with respect to Gender

As seen in **Table 3** below the mean rate of absolute presenteeism among males and females was similar, with a score of 77.12% among females and 76.67% among males. An independent samples t-test was undertaken to determine if there was a statistical difference between the average rate of absolute presenteeism between females and males. The results of the independent samples t-test indicated that there was no statistical significant difference between the average rate of absolute presenteeism of females compared to males, $t=.138$, $df=102$, $p=.890$.

Case Processing Summary

Absolute Presenteeism			
Gender	Mean	N	Std. Deviation
Female	77.12	59	17.913
Male	76.67	45	14.460
Total	76.92	104	16.433

Table 3: Mean and Standard Deviation in relation to absolute presenteeism and Gender

5.2.2 Absolute Presenteeism by Age

When looking at absolute presenteeism by age groups the study considered 104 participants, this left only one participant not being valid. Of the 104 participants 2 were in the age category 18-24 years, 14 were in the category 25-34 years, 69 were in the category 35-44 years, 16 were in the category 45-54 years and 3 were over 55 years. On inspection of **Figure 2** it can be noted that the rate of absolute presenteeism that an employee has seems to increase with age.

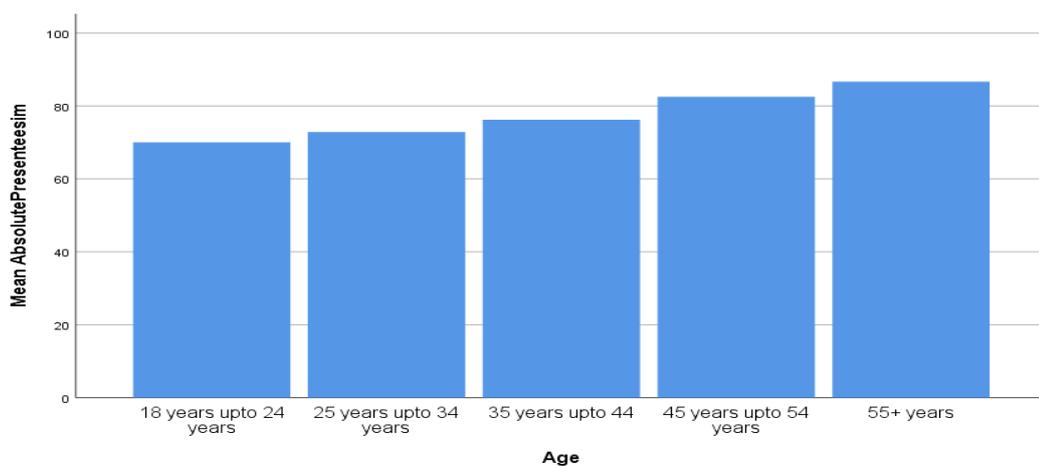


Figure 2: Absolute presenteeism with respect to Age

An analysis of variance was undertaken to determine if the average absolute presenteeism was different between age groups. The results of the analysis of variance indicating that there was no statistical significant difference between average absolute presenteeism and those aged between 18 and 24 years ($M=70$, $SD=14.14$), those aged between 25 and 34 years ($M=72.86$, $SD=13.26$), those aged between 35 and 44 years ($M=76.23$, $SD=16.81$), those aged between 45 and 55 years ($M=82.5$, $SD=17.71$) and those with an age greater than 55 years ($M=86.67$, $SD=11.55$), $F(4, 99)=1.06$, $p=.38$. The overall results are presented in **Tables 4 and 5**.

Although the Anova test shows that there does not seem to be a significant different between the age groups in relation to absolute presenteeism the table below shows that the mean percentage of absolute presenteeism across age categories does have a

difference with a range from 70% to 86.67%, with the 18-24 year olds having the lowest level of absolute presenteeism and the over 55 years category having the highest level of absolute presenteeism. However seeing as there are not many observations in the 18-24 year age group (2) and the 55+ age group (4) these differences cannot be recorded as a significant difference.

Anova					
Absolute Presenteeism					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1142.714	4	285.678	1.060	.380
Within Groups	26672.671	99	269.421		
Total	27815.385	103			

Table 4: Absolute presenteeism and age

Descriptives				
Absolute Presenteeism				
Age	N	Mean	Std. Deviation	Std. Error
18-24 years	2	70.00	14.142	10.00
25-34 years	14	72.86	13.260	3.544
35-44 years	69	76.23	16.812	2.024
45-54 years	16	82.50	17.701	4.425
55+ years	3	86.67	11.5447	6.667
Total	104	76.92	16.433	1.611

Table 5: Case Summary of Absolute Presenteeism in relation to age.

5.2.3 Absolute Presenteeism by Employment Sector

When looking at absolute presenteeism in relation to the sectors which the employees work in, the study considered all 105 participants. Of the 105 participants 73 worked in the Private Sector, 19 worked in the Public Sector and 13 were Self-Employed.

The histograms shown in **Figures 3, 4 and 5** show the differences between the employment sectors with respect to absolute presenteeism. The horizontal axis represents the percentage of absolute presenteeism self-reported by the employees while the vertical axis shows the level of absolute presenteeism reported by each Sector. These histograms show that the mean levels of Absolute Presenteesim reported across the sectors is very similar, with the Public Sector reporting an average of 77.37%, the Private Sector reporting 76.53% and the Self -Employed reporting 78.46%.

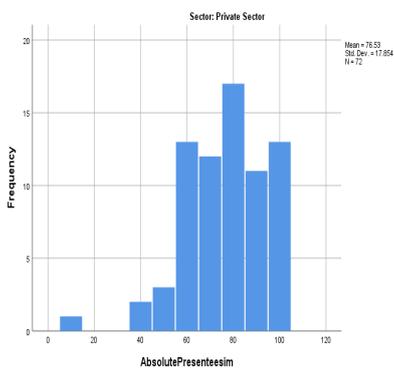


Figure 3: AP with respect to the Private Sector

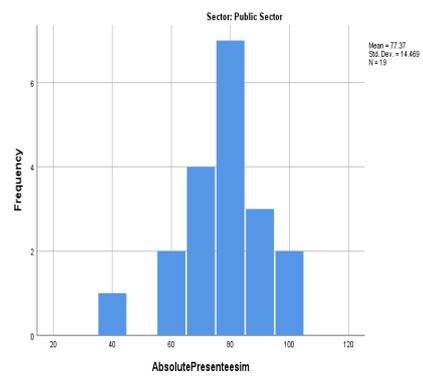


Figure 4: AP with respect to the Public Sector

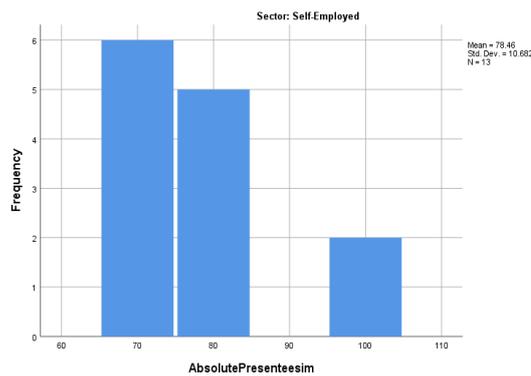


Figure 5: AP with respect to the Self-Employed

An analysis of variance was undertaken to determine if average absolute presenteeism was different between sectors of employment. The results of the analysis of variance indicating that there was no statistical significant difference between average absolute presenteeism between those who worked in the public sector (M= 77.37, SD=14.47), those that worked in the private sector (M=76.53, SD=17.85), and those that were self-employed (M= 78.46, SD= 10.68), $F(2, 101) = .083, p = .920$. The overall results are presented in **Tables 6 and 7**.

Descriptives				
Absolute Presenteeism				
	N	Mean	Std. Deviation	Std. Error
Private Sector	72	76.53	17.854	2.104
Public Sector	19	77.37	14.469	3.319
Self-Employed	13	78.46	10.682	2.963
Total	104	76.92	16.433	1.611

Table 6: Case summary of absenteeism in relation to employment sector

Anova					
Absolute Presenteeism					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	45.788	2	22.894	.083	.920
Within Groups	27769.596	101	274.946		
Total	27815.385	103			

Table 7: Absolute presenteesim and employment sector

5.3 Relative Presenteeism (RP)

5.3.1 Relative Presenteeism by Gender

When looking at Relative Presenteeism across genders the study considered 104 participants, this left only one participant not being valid. The histogram shown in **Figure 6** shows the differences between genders with respect to Relative Presenteeism. The horizontal axis represents the level of Relative Presenteeism self-reported by the employee while the vertical axis on the right represents the gender of the employee and the vertical axis on the left represents the number of employees

represented. This histogram indicates that the majority of both males and females reported a rate of Relative Presenteeism of 1.00.

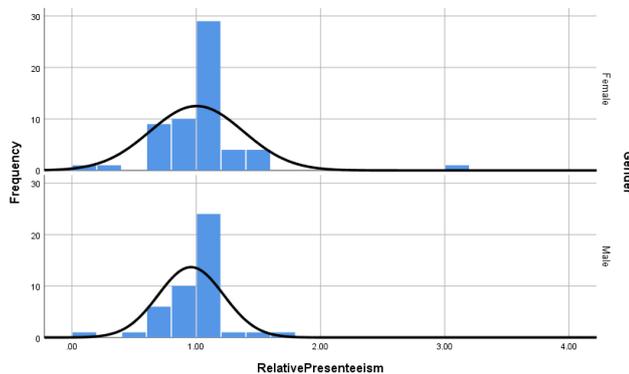


Figure 6 Represents the rate of Relative Presenteeism across Genders.

An independent samples t-test was undertaken to determine if there was a statistical difference between the average rate of relative presenteeism and genders. The results of the independent samples t-test indicated that there was no statistical significant difference between the average rate of relative presenteeism by females (M= 1.00, SD=.37) compared to males (M=0.96, SD=0.26), $t = 0.695$, $df=102$, $p=.489$.

5.3.2 Relative Presenteeism by Age

When looking at relative presenteeism by age groups the study considered 104 participants, this left only one participant not being valid. Of the 104 participants 2 were in the age category 18-24 years, 14 were in the category 25-34 years, 69 were in the category 35-44 years, 16 were in the category 45-54 years and 3 were over 55 years. The histogram shown in **Figure 7** shows the differences between age groups with respect to relative presenteeism. The horizontal axis represents the level of relative presenteeism self-reported by the employee while the vertical axis on the right represents the age group of the employee and the vertical axis on the left represents the number of employees represented. On inspection of **Figure 7** it can be noted that the majority of 35-44 year olds reported a rate of relative presenteeism of 1:00. With the majority of all age groups reporting a rate between .75 and 1.5.

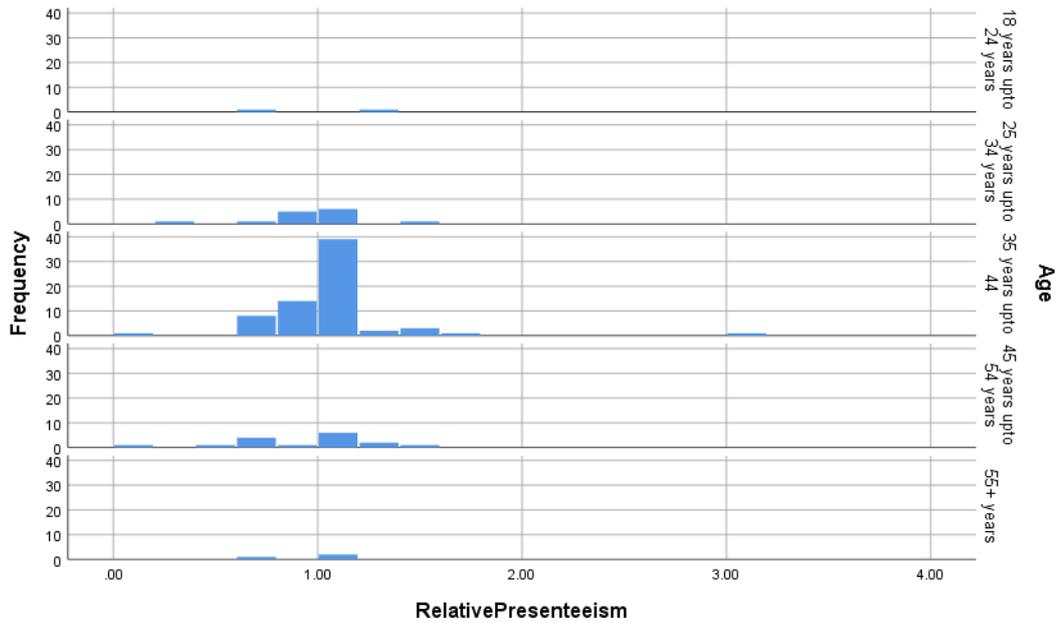


Figure 7 Relative Presenteeism across Age categories.

An analysis of variance was undertaken to determine if average relative presenteeism was different between age groups. The results of the analysis of variance indicating that there was no statistical significant difference between the average rate of relative presenteeism between those aged between 18 and 24 years ($M=.98, SD=0.5$), those aged between 25 and 34 years ($M=0.95, SD=0.26$), those aged between 35 and 44 years ($M=1.01, SD=0.34$), those aged between 45 and 55 years ($M=0.90, SD=0.35$) and those with an age greater than 55 years ($M=0.92, SD=0.14$), $F(4, 99)=0.49$, $p=.743$. The overall results are presented in **Tables 8 and 9**.

Although the Anova test shows that there does not seem to be a significantly different between the age group in relation to relative presenteeism the table below shows that the mean percentage of relative presenteeism across age categories does have a difference with a range from 0.90 to 1.01, with the 45-54 year old having the lowest level of relative presenteesim and the 35-44 year category having the highest level of relative presenteeism. However seeing as there are not many observations in the 18-24 year age group (2) and the 55+ age group (3) these differences cannot be recorded as a significant difference.

Table 8: Relative presenteeism and age

Anova					
Relative Presenteeism					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.219	4	.055	.49	.743
Within Groups	11.078	99	.112		
Total	11.297	103			

Descriptives				
Relative Presenteeism				
	N	Mean	Std. Deviation	Std. Error
18-24 years	2	.9792	.50087	.35417
25-34 years	14	.9477	.26406	.07057
35-44 years	69	1.0141	.34279	.04127
45-54 years	16	.8957	.35482	.08871
55+ years	3	.9167	.14434	.08333
Total	104	.9834	.33118	.03247

Table 9: Case summary of relative presenteeism in relation to age

5.3.3 Relative Presenteeism by Employment Sector

When looking at Relative Presenteeism in relation to the sectors which the employees work in, the study considered all 104 participants. Of the 104 participants 72 worked in the Private Sector, 19 worked in the Public Sector and 13 were Self-Employed.

The histograms shown in **Figure 8, 9 and 10** show the differences between the employment sectors with respect to Relative Presenteeism. The horizontal axis represents the rate of Relative Presenteeism self-reported by the employees while the vertical axis shows the number of employees reporting Relative Presenteeism based on their sector of employment. Figure represents the Private Sector, Figure represents the Public Sector and Figure represents the Self-Employed. These histogram shows that the mean levels of Relative Presenteesim reported across the sectors is very similar, with the Public Sector reporting an average of 77.37%, the Private Sector reporting 76.53% and the Self -Employed reporting 78.46%.

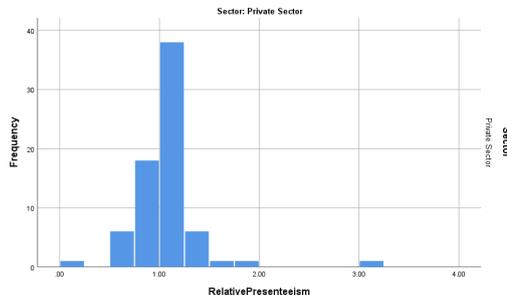


Figure 8: RP in the Private Sector

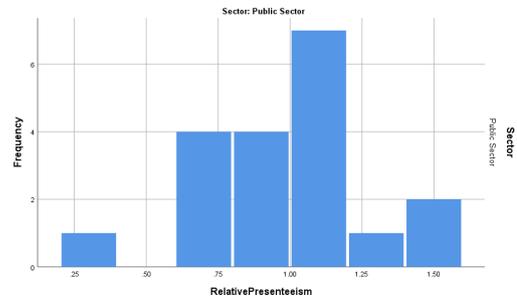


Figure 9: RP in the Public Sector

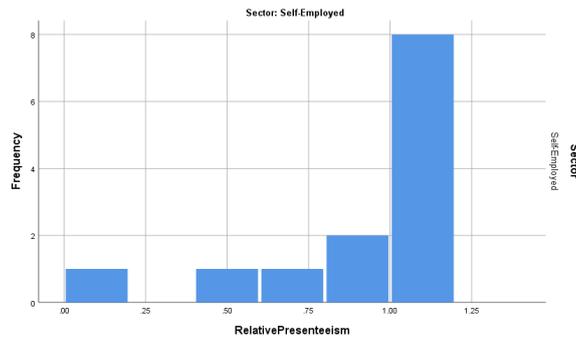


Figure 10: RP among the Self-Employed.

An analysis of variance was undertaken to determine if average Relative Presenteeism was different between sectors of employment. The results of the analysis of variance indicating that there was no statistical significant difference between average Relative Presenteeism between those who worked in the public sector (M= 0.94, SD=0.30), those that worked in the private sector (M=1.01, SD=0.34), and those that were self-employed (M= 0.89, SD= 0.32), $F(2, 101)= .963$, $p=.385$. With that said, our results do show a difference of approximately 0.10 points between those that work in private sector in contrast to those that are self-employed. The overall results are presented in **Tables 10 and 11**.

	N	Mean	Std. Deviation	Std. Error
Private Sector	72	1.0120	.33939	.04000
Public Sector	19	.9400	.30257	.06941
Self-Employed	13	.8887	.32399	.08986
Total	104	.9834	.33118	.03247

Table 10: Group statistics in relation to Relative Presenteeism and Employment Sector

Anova					
Relative Presenteeism					
	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	.211	2	.106	.963	.385
Within Groups	11.086	101	.110		
Total	11.297	103			

Table 11: Statistical difference between Relative Presenteeism and Employment Sector

5.3.4 Relative Presenteeism by Gender and Age

When looking at Relative Presenteeism across genders the study considered 104 participants, this left only one participant not being valid. The bar chart shown in **Figure 11** shows the differences between genders and age with respect to Relative Presenteeism. The horizontal axis represents the gender while the vertical axis on the right represents the age grouping of the employee and the vertical axis on the left represents the level of Relative Presenteeism for each age group self-reported by the employee. This Bar chart shows that the rate of Relative Presenteeism across all age categories, except the over 55 age group, is highest in females.

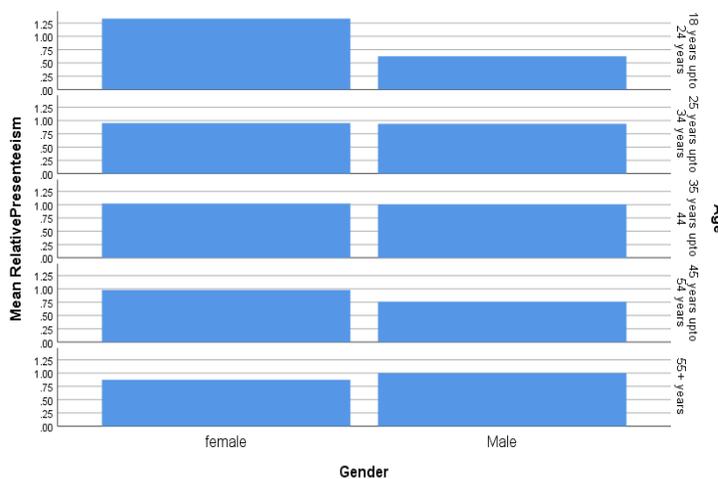


Figure 11: Relative Presenteeism with respect to Gender and Age

The mean rate of Relative Presenteeism is higher in females than males, with females averaging 1.0032 while males averaged 0.9575. This is shown in **Table 12**.

Descriptive Statistics						
Gender		N	Minimum	Maximum	Mean	Std. Deviation
Female	Relative Presenteeism	59	.00	3.00	1.0032	.37626
	Gender	60	0	0	.00	.000
	Valid N (listwise)	59				
Male	Relative Presenteeism	45	.00	1.75	.9575	.26253
	Gender	45	1	1	1.00	.000
	Valid N (listwise)	45				

Table 12: Case Summary of Relative Presenteeism in relation to gender.

5.3.5 Relative Presenteeism by Sector and Age

The bar chart shown in **Figure 12** shows the differences between employment sectors and age category with respect to Relative Presenteeism. There are 3 different employment sectors, the Private Sector, the Public Sector and the Self-Employed and 5 different age categories, 18-24 years, 25-34 years, 35-44 years, 45-54 years and the over 55 years. The horizontal axis represents the Employment Sector that the employees work in while the vertical axis on the right shows the age category of the employee and the vertical axis on the left shows the level of Relative Presenteeism self-reported by the employees.

As seen in the Bar Chart below the mean rate of Relative Presenteeism across all age categories is highest in the Private Sector.

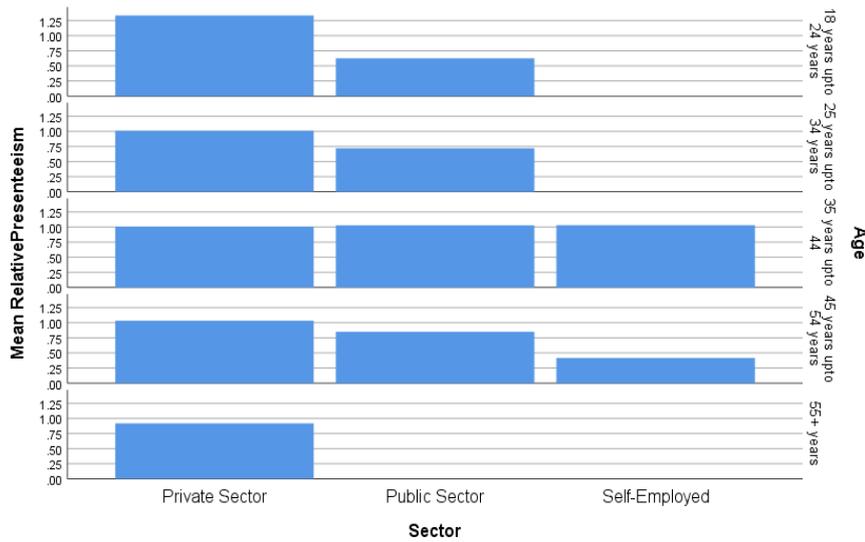


Figure 12: Relative Presenteeism with respect to Employment Sector and Age.

5.4 Vigorous Physical Activity

5.4.1 Vigorous Physical Activity across Genders

Considering the differences in Vigorous Physical Activity across genders the study considered a total of 105 participants of which 104 were included as fully valid responses. Noting that 57.1% (60 respondents) of participants in this self-reported questionnaire are female and 42.9% (45 respondents) are male. The horizontal axis in the bar chart below represents the number of days that the employees carried out vigorous Physical Activity. The blue column represents females and the red column represents the males. And the vertical axis represents the number of employees. The Bar chart below indicates that a large proportion of females report that they do no vigorous physical activity. Three times the amount of males.

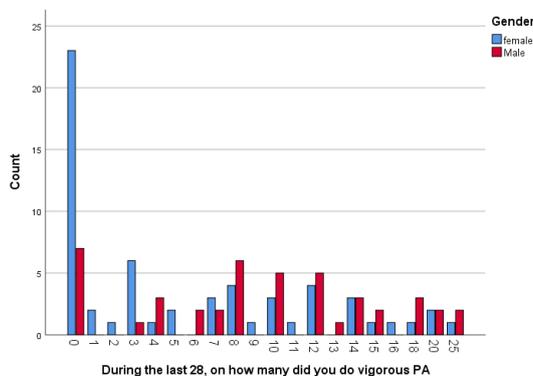


Figure 13: Vigorous Physical Activity with respect to Gender.

An independent samples t-test was undertaken to determine if there was a statistical difference between the average vigorous Physical Activity carried out between females and males. The results of the independent samples t-test indicated that there was a statistical significant difference between the average vigorous Physical Activity carried out by females (M= 5.72, SD= 6.46) compared to males (M=9.73, SD=6.64), $t = -3.077$, $df = 91.348$, $p = .003$. In fact females undertake less vigorous Physical Activity in contrast to their male counterparts. This graph also shows that 22.1% (23 respondents) of females stated that they did no vigorous physical activity in the past 28 days compared with only 6.7% (7) of males.

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
During the last 28 days, on how many days did you do vigorous PA	Female	60	5.72	6.463	.834
	Male	44	9.73	6.642	1.001

Table 13: Group statistics in relation to Vigorous PA and gender

Independent Samples Test					
Levene's Test for Equality of Variances					
		F	Sig.	T	df
During the last 28 days, on how many days did you do vigorous PA	Equal variances assumed	.101	.752	-3.090	102
	Equal variances not assumed			-3.077	91.348

Table 14: Independent Sample's Test in relation to Vigorous PA and gender

5.4.2 Vigorous Physical Activity with Respect to Age

When looking at employee vigorous physical activity by age categories, a total of 104 respondents completed these questions in the survey. In the Bar chart below in **Figure 14** the horizontal axis represents the age category of the employee doing the vigorous Physical Activity. The vertical axis represents the average number of days the employee participated in vigorous Physical Activity. The blue column represents the average number of day that the employee participated in vigorous Physical

Activity in a 28 day period while the red column represents how many of these episodes were during a working day. The results show that the younger age groups do more vigorous Physical Activity than the older age groups. However, with that said, the amount of vigorous Physical Activity done during a working day is proportionately less in the 18-24 year old age group than all the other age groups.

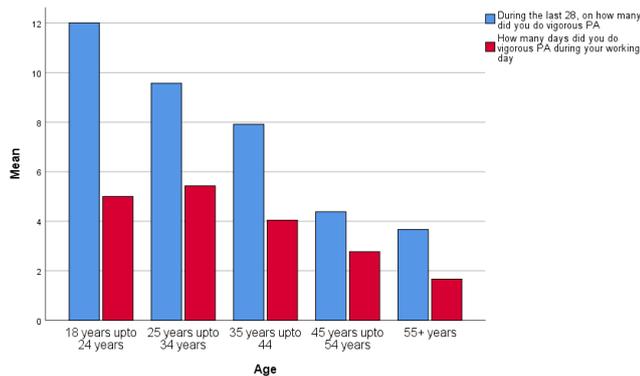


Figure 14: Vigorous Physical Activity with respect to Age.

An analysis of variance was undertaken to determine if average vigorous Physical Activity was different between age groups. The results of the analysis of variance indicating that there was no statistical significant difference between average between vigorous Physical Activity carried out by those aged between 18 and 24 years ($M=12, SD=2.83$, those aged between 25 and 34 years ($M=9.57, SD= 7.22$), those aged between 35 and 44 years ($M=7.8, SD=6.99$), those aged between 45 and 55 years ($M=4.27, SD=5.12$) and those with an age greater than 55 years ($M=2.75, SD=3.78$), $F(4, 99)=1.978, p=.104$. The overall results are presented in Tables 15 and 16.

Although the Anova test shows that there does not seem to be a significantly different between the age group in relation to the amount of vigorous Physical Activity that they carry out, the table below shows that there is a big difference in the mean varying from 2.75 – 12. However seeing as there are not many observations in the 18-24 year age group (2) and the 55+ age group (4) these differences cannot be recorded as a significant difference.

Descriptives				
During the last 28 days, on how many days did you do vigorous PA				
	N	Mean	Std. Deviation	Std. Error
18-24 years	2	12	2.828	2.000
25-34 years	14	9.57	7.219	1.929
35-44 years	69	7.80	6.989	.841
45-54 years	15	4.27	5.120	1.322
55+ years	4	2.75	3.775	1.887
Total	104	7.41	6.805	.667

Table 15: Group statistics in relation to Vigorous PA and age group

Anova					
During the last 28 days, on how many days did you do vigorous PA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	352.950	4	88.237	1.978	.104
Within Groups	4416.271	99	44.609		
Total	4769.221	103			

Table 16: Statistical difference between carrying out vigorous PA and age

5.4.3 Vigorous Physical Activity with Respect to Sector

When looking at employee vigorous Physical Activity by sector of employment, a total of 104 respondents completed these questions in the survey. In the histogram below in **Figure 15** the horizontal axis represents the age category of the employee doing the vigorous Physical Activity. The vertical axis represents the number of days that an employee undertook vigorous Physical Activity in a 28 day period. The vertical axis to the right represents the employment sector and the vertical axis to the left represents the number of employees. The histogram indicates that the majority of employees partaking in vigorous Physical Activity are from the Private sector.

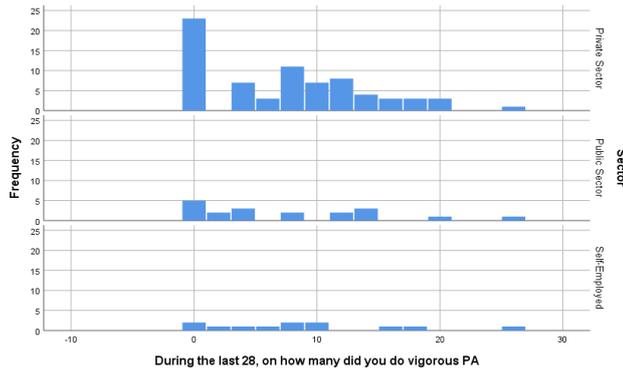


Figure 15: Vigorous Physical Activity with Respect to Sector

An analysis of variance was undertaken to determine if the amount of vigorous Physical Activity is different between sectors of employment. The results of the analysis of variance indicating that there was no statistical significant difference between the amount of time spent doing vigorous Physical Activity and between those who worked in the public sector ($M= 7.32$, $SD=7.5$), those that worked in the private sector ($M=7.25$, $SD=6.5$), and those that were self-employed ($M= 8.58$, $SD= 7.68$), $F(2, 101)= 0.198$, $p=.821$. The overall results are presented in **Tables 17 and 18**.

Descriptives				
During the last 28 days, on how many days did you do vigorous PA				
	N	Mean	Std. Deviation	Std. Error
Private Sector	73	7.25	6.546	.766
Public Sector	19	7.32	7.513	1.724
Self-Employed	12	8.58	7.681	2.217
Total	104	7.41	6.805	.667

Table 17: Group statistics in relation to Vigorous PA and Employment Sector

Anova					
During the last 28 days, on how many days did you do vigorous PA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	18.638	2	9.319	.198	.821
Within Groups	4750.584	101	47.035		
Total	4769.221	103			

Table 18: Statistical difference between carrying out Vigorous PA and Employment Sector

5.4.4 Vigorous Physical Activity in work versus outside of work by Gender.

The bar chart shown in **Figure 16** shows the comparisons between the amount of Vigorous Physical Activity carried out in a 28 day period, the amount of Vigorous Physical Activity carried out during the working day and gender. The horizontal axis represents the gender of the employee while the vertical axis represents the average number of days that the employee participated in Vigorous Physical Activity in a 28 day period. The blue column represents the average number of day that the employee participated in vigorous Physical Activity in a 28 day period while the red column represents how many of these days were during a working day.

As seen in the Bar chart below the average number of days that the males participated in Vigorous Physical Activity was 10, of those 10 days 6 days were during the working day, representing 60%. While the average number of days that the females participated in Vigorous Physical Activity was 6, of those 6 days 2.5 days were during the working day, representing 42% of their vigorous PA. Therefore males do more vigorous Physical Activity than females. Males also do more of their Vigorous Physical Activity during a working day than females.

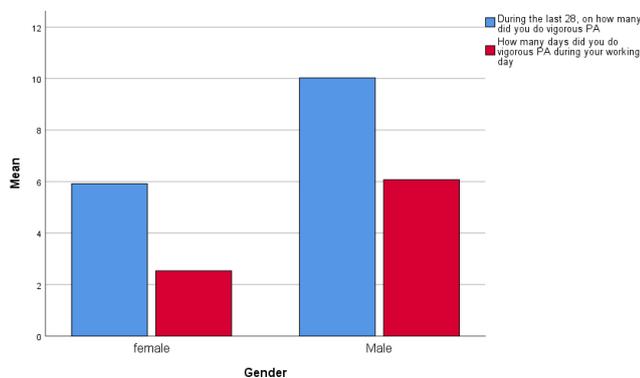


Figure 16: Vigorous Physical Activity during a 28 day period and Vigorous Physical Activity during the working day with respect to gender.

5.5 Moderate Physical Activity

5.5.1 Moderate Physical Activity and Gender

Considering the differences in moderate Physical Activity across genders the study considered a total of 105 participants of which all were included as fully valid responses. Noting that 57.1% (60 respondents) of participants in this self-reported questionnaire are female and 42.9% (45 respondents) are male. The horizontal axis in the histogram below represents the number of days that the employees carried out moderate Physical Activity. The vertical axis to the right represents the gender and the vertical axis to the left represents the number of employees. The histogram below indicates that slightly more females carry out moderate Physical Activity than males, however more females continue to carry out no moderate physical activity in a 28 day period than males.

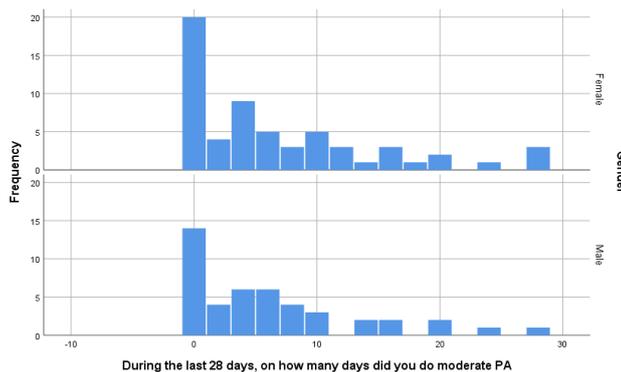


Figure 17: Moderate Physical Activity and Gender

An independent samples t-test was undertaken to determine if there was a statistical difference between the average moderate Physical Activity carried out between females and males. The results of the independent samples t-test indicated that there was no statistical significant difference between the average moderate Physical Activity carried out by females ($M= 6.62$, $SD= 7.859$) compared to males ($M=6.04$, $SD=6.94$), $t= 0.388$, $df=103$, $p=.699$.

5.5.2 Moderate Physical Activity with respect to Age

When looking at employee moderate physical activity by age categories, a total of 104 respondents completed these questions in the survey. In the histogram below in **Figure 18** the horizontal axis represents the number of days in which an employee carries out moderate Physical Activity during a 28 day period. The vertical axis on the right represents the age category of the employee and the vertical axis on the left represents the number of employees. The histogram indicates that the 35-44 year olds carry out the most amount of moderate Physical Activity while the 55+ year olds carry out the least.

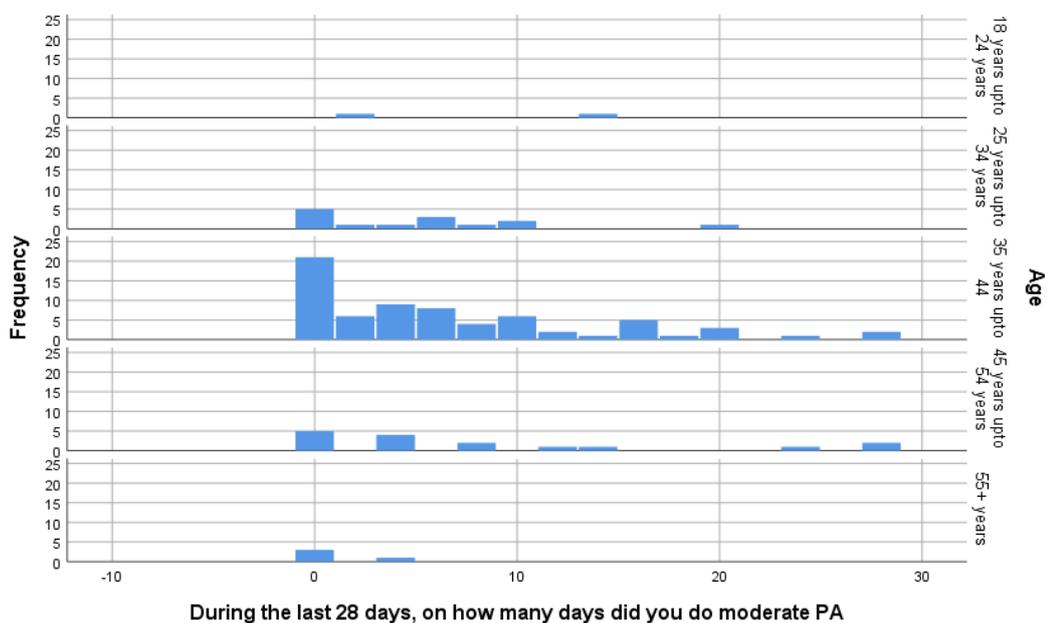


Figure 18: Moderate Physical Activity with respect to Age

An analysis of variance was undertaken to determine if average moderate Physical Activity was different between age groups. The results of the analysis of variance indicating that there was no statistical significant difference between average moderate Physical Activity carried out by those aged between 18 and 24 years (M=8, SD=8.49, those aged between 25 and 34 years (M=4.71, SD= 5.62), those aged between 35 and 44 years (M=6.52, SD=7.22), those aged between 45 and 55 years (M=8.38, SD=10) and those with an age greater than 55 years (M=0.75, SD=1.5), $F(4, 100)=1.066$, $p=.378$. The overall results are presented in **Tables 19 and 20**.

Although the Anova test shows that there does not seem to be a significantly different between the age group in relation to the amount of moderate Physical Activity that they carry out, the table below shows that there is a big difference in the mean varying from 0.75 – 8.38. However seeing as there are not many observations in the 18-24 year age group (2) and the 55+ age group (4) these differences cannot be recorded as a significant difference.

Anova					
During the last 28 days, on how many days did you do moderate PA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	235.940	4	58.985	1.066	.378
Within Groups	5534.575	100	55.346		
Total	5770.514	104			

Table 19: Group statistics in relation to moderate PA and age group

Descriptives				
During the last 28 days, on how many days did you do moderate PA				
	N	Mean	Std. Deviation	Std. Error
18-24 years	2	8	8.485	6.000
25-34 years	14	4.71	5.622	1.502
35-44 years	69	6.52	7.223	.869
45-54 years	16	8.38	9.992	2.498
55+ years	4	.75	1.500	.750
Total	105	6.37	7.449	.727

Table 20: Statistical difference between carrying out moderate PA and age group

5.5.3 Moderate Physical Activity and Employment Sector

When looking at employee moderate Physical Activity by sector of employment, a total of 104 respondents completed these questions in the survey. In the histogram below in **Figure 19** the horizontal axis represents the number of days that moderate Physical Activity was carried out in a 28 day period. The vertical axis on the right represents the sector of employment and the vertical axis on the right represents the number of employees carrying out the moderate Physical Activity. The histogram indicates that the majority of employees partaking in moderate Physical Activity are from the Private sector.

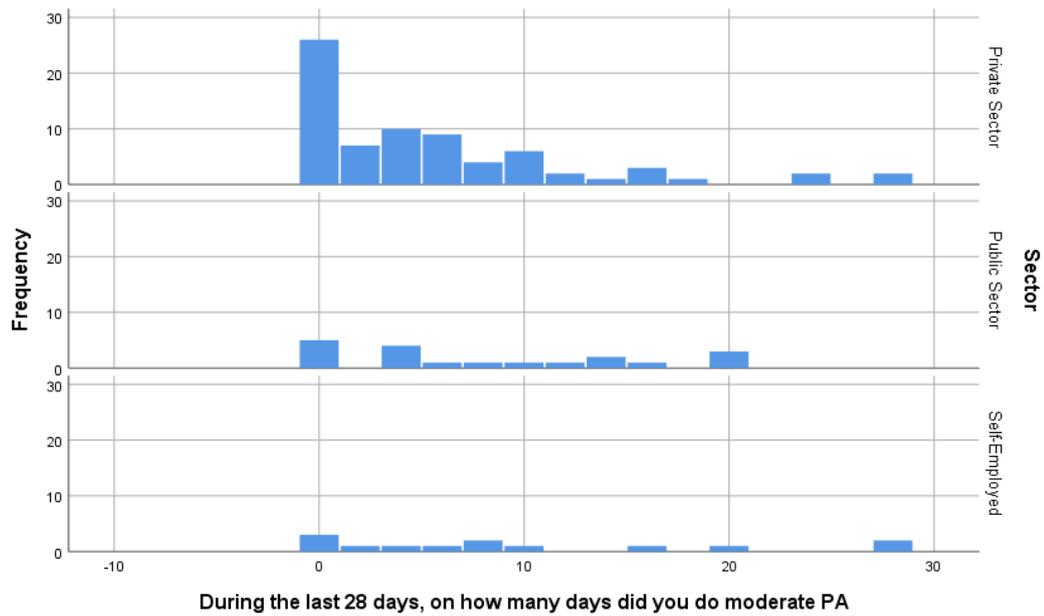


Figure 19: Moderate Physical Activity and Sector of Employment

An analysis of variance was undertaken to determine if the amount of moderate Physical Activity is different between sectors of employment. The results of the analysis of variance indicating that there was no statistical significant difference between the amount of time spent doing moderate Physical Activity and between those who worked in the public sector (M= 8.05, SD=7.38), those that worked in the private sector (M=5.36, SD=6.83), and those that were self-employed (M= 9.62, SD= 9.8), $F(2, 102)= 2.462, p=.09$. The overall results are presented in **Tables 21 and 22**.

Descriptives				
During the last 28 days, on how many days did you do moderate PA				
	N	Mean	Std. Deviation	Std. Error
Private Sector	73	5.36	6.834	.800
Public Sector	19	8.05	7.375	1.692
Self-Employed	13	9.62	9.845	2.730
Total	105	6.37	7.449	.727

Table 21: Group statistics in relation to moderate PA and employment sector

Anova					
During the last 28 days, on how many days did you do moderate PA					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	265.750	2	132.875	2.462	.090
Within Groups	5504.764	102	53.968		
Total	5770.514	104			

Table 22: Statistical difference between carrying out moderate PA and employment sector

5.5.4 Moderate Physical Activity within and outside of work with Respect to Gender

Interestingly, when looking at moderate Physical Activity, unlike vigorous Physical Activity, females participate in it more frequently than males. However, males continue to carry out their moderate Physical Activity more frequently during a working day than females.

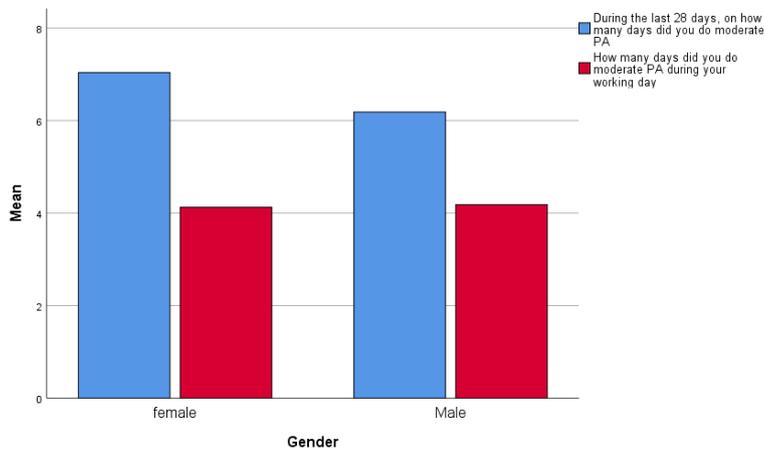


Figure 20: Moderate Physical Activity during a 28 day period and Moderate Physical Activity during the working day with respect to gender.

5.6 Time Spent Walking

5.6.1 Time Spent walking with Respect to Gender

Considering the differences in time spent walking by employees across genders the study considered a total of 104 participants. Noting that 56.1% (59 respondents) of participants in this self-reported questionnaire are female and 42.9% (45 respondents) are male. The horizontal axis in the histogram below represents the number of days that the employees spent time walking. The vertical axis to the right represents the gender and the vertical axis to the left represents the number of employees that spent time walking. The histogram below indicates that the majority of employees spent time walking on 25 of the 28 days, with females carrying out more walking than males.

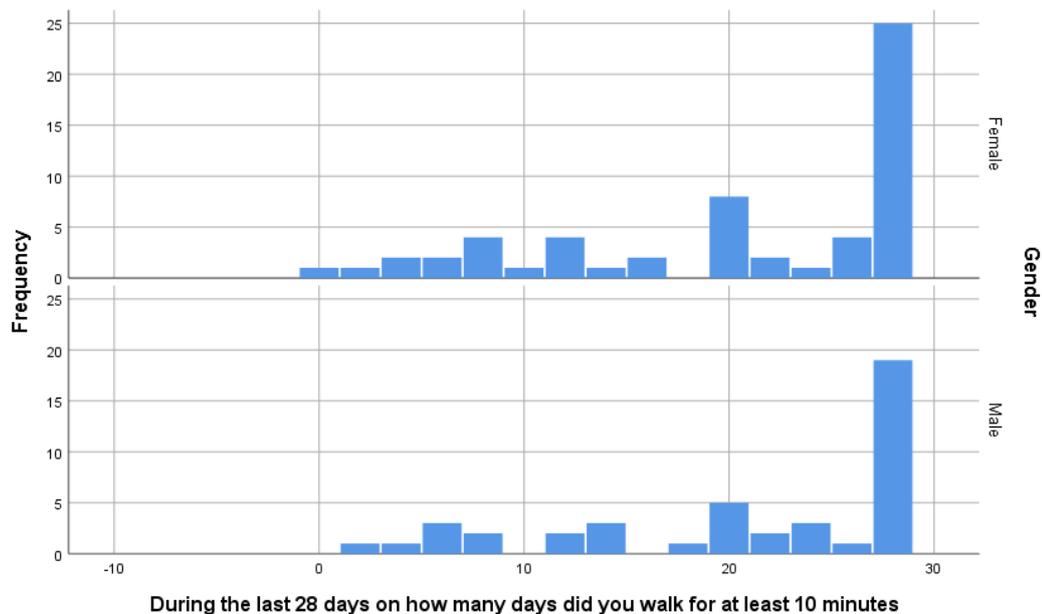


Figure 21: Time Spent walking with respect to Gender

An independent samples t-test was undertaken to determine if there was a statistical difference between the time spent walking in a 28 day period and females and males. The results of the independent samples t-test indicated that there was no statistical significant difference between the average time spent walking by females ($M=20.36$, $SD=8.914$) compared to males ($M=20.72$, $SD=8.542$), $t=-0.204$, $df=99$, $p=0.839$

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
During the last 28 days, on how many days did you walk for at least 10 minutes	Female	58	20.36	8.914	1.170
	Male	43	20.72	8.542	1.303

Table 23: Group statistics in relation to walking and gender

Independent Samples Test						
Levene's Test for Equality of Variances						
		F	Sig.	t	df	Sig. (2-tailed)
During the last 28 days, on how many days did you walk for at least 10 minutes	Equal variances assumed	.165	.685	-.204	99	0.839
	Equal variances not assumed			-.205	92.681	

Table 24: Independent Sample's Test in relation to walking and gender

5.6.2 Time Spent walking with respect to Age

When looking at the time spent walking by employees with respect to age, a total of 101 respondents completed these questions in the survey. . Of the 101 participants 2 were in the age category 18-24 years, 14 were in the category 25-34 years, 66 were in the category 35-44 years, 15 were in the category 45-54 years and 4 were over 55 years. In the histogram below in **Figure 22** the horizontal axis represents the number of days that the employees spent walking during the past 28 day period. The vertical axis on the right represents that age category of the employees and the vertical axis on the left represents that number of employees carrying out the walking. The histogram indicates that the 35-44 year olds carry out the most amount of walking.

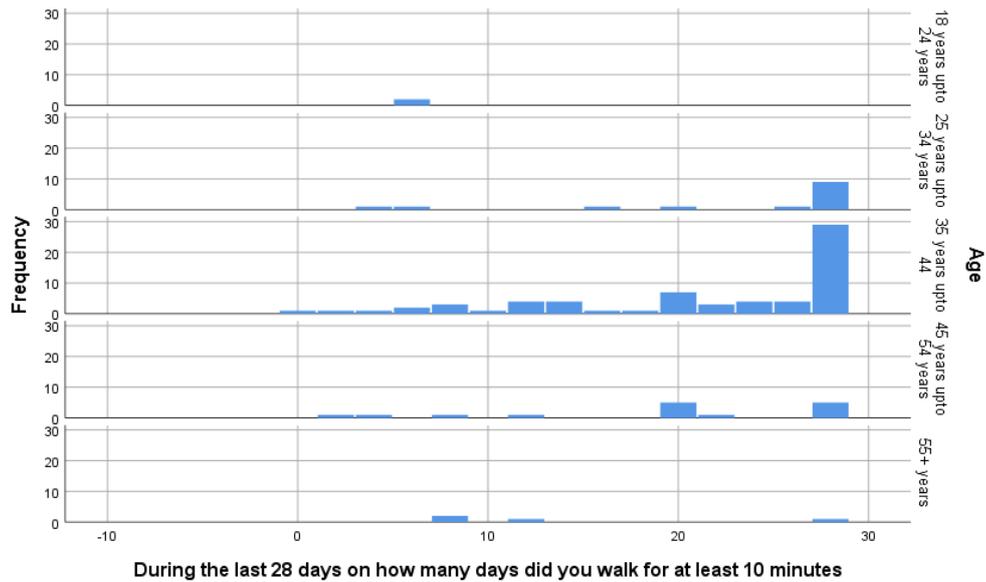
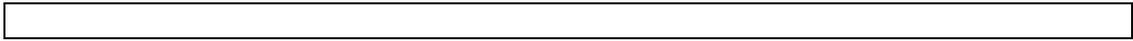


Figure 22: Time Spent walking with respect to Age

An analysis of variance was undertaken to determine if the average number of days where walking took place was different between age groups. The results of the analysis of variance indicating that there was a statistical significant difference between the average number of days that walking took place by those aged between 18 and 24 years ($M=5$, $SD=0.00$), those aged between 25 and 34 years ($M=23$, $SD=8.735$), those aged between 35 and 44 years ($M=21.21$, $SD=8.17$), those aged between 45 and 55 years ($M=19$, $SD=9.1$) and those with an age greater than 55 years ($M=13.75$, $SD=9.74$), $F(4, 96)=2.894$, $p=.026$. The overall results are presented in **Tables 25 and 26**.

During the last 28 days, on how many days did you do walk for at least 10 minutes				
	N	Mean	Std. Deviation	Std. Error
18-24 years	2	5	.000	.000
25-34 years	14	23.00	8.735	2.335
35-44 years	66	21.21	8.170	1.006
45-54 years	15	19.00	9.118	2.354
55+ years	4	13.75	9.743	4.871
Total	101	20.51	8.716	.867

Table 25: Group statistics in relation to walking and age group

Anova					
During the last 28 days, on how many days did you walk					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	817.447	4	204.362	2.894	.026
Within Groups	6779.780	96	70.623		
Total	7597.228	100			

Table 26: Statistical difference between walking and age group

5.6.3 Time Spent Walking with respect to Employment Sector

When looking at employee’s time spent walking by sector of employment, a total of 104 respondents completed these questions in the survey. In the histogram below in **Figure 23** the horizontal axis represents the number of days walking was carried out in a 28 day period. The vertical axis on the right represents the sector of employment and the vertical axis on the right represents the number of employees carrying out the walking. The histogram indicates that the majority of employees partaking in walking are from the Private sector.

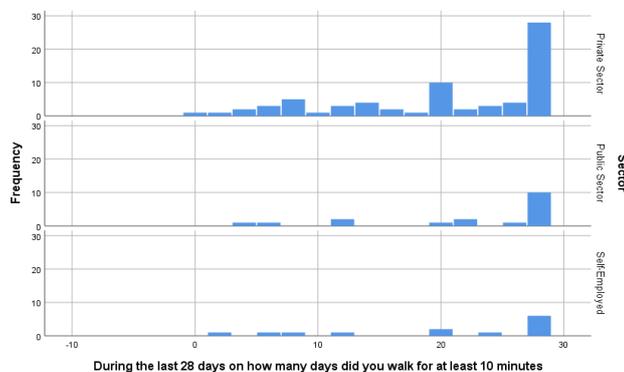


Figure 23: Time spent walking with respect to Employment Sector

An analysis of variance was undertaken to determine if the amount of time spent walking is different between sectors of employment. The results of the analysis of variance indicating that there was no statistical significant difference between the amount of time spent walking and between those who worked in the public sector (M= 22.22, SD=8.51), those that worked in the private sector (M=20.17, SD=8.66), and those that were self-employed (M= 20, SD= 9.7), $F(2, 98)= 0.417$, $p=.66$. The overall results are presented in **Tables 27 and 28**.

Descriptives				
During the last 28 days, on how many days did you walk for at least 10 mins				
	N	Mean	Std. Deviation	Std. Error
Private Sector	70	20.17	8.659	1.035
Public Sector	18	22.22	8.510	2.006
Self-Employed	13	20.00	9.695	2.689
Total	101	20.51	8.716	.867

Table 27: Group statistics in relation to walking and employment sector

Anova					
During the last 28 days, on how many days did you do walk for at least 10 mins					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	64.174	2	32.087	.417	.660
Within Groups	7533.054	98	76.868		
Total	7597.228	100			

Table 28: Statistical difference between carrying out moderate PA and employment sector

5.6.4 Time spent walking during the working day and outside of the working day with Respect to Age

When looking at the time spent walking by employees with respect to age, a total of 104 respondents completed these questions in the survey. In the Bar chart below in **Figure 24** the horizontal axis represents the age category of the employee who

spends time walking. The vertical axis represents the average number of days the employee spent time walking. The blue column represents the average number of day that the employee spent time walking in a 28 day period while the red column represents how many of these episodes were during a working day. The results show that walking is carried out on many more days during a 28 day period than any other type of physical activity. The Bar chart also shows that the majority of the time spent walking is during the working day in all age categories apart from the 18-24 year olds.

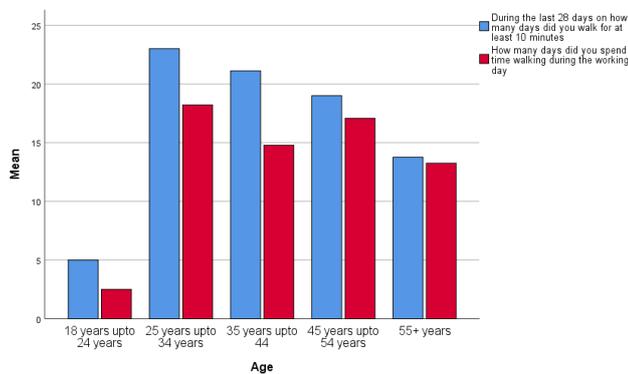


Figure 24 : Time spent walking with respect to age.

5.7 Mental Health

5.7.1 Mental Health and Gender

When looking at whether employees went into work when they were feeling mentally unwell and comparing this across genders the study considered 105 participants., Of the 104 participants 60 (57.1%) were female and 45 (42.9%) were male.

Figure 25 below shows the difference between male and female distributions with respect to whether they worked while mentally unwell. The horizontal axis represents whether the employee attended work while feeling mentally unwell in the past 12 months. While the vertical axis represents the number of males and females.

This bar chart indicates that more females went to work while feeling mentally unwell than males.

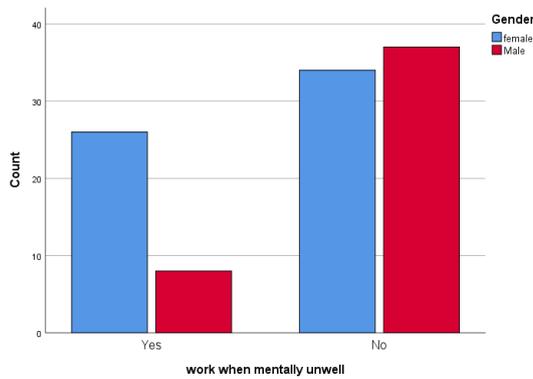


Figure 25: Relationship between working when mentally unwell and gender

An independent samples t-test was undertaken to determine if there was a statistical difference between attending work while feeling mentally unwell and gender. The results of the independent samples t-test indicated that there was a statistical significant difference between gender and attending work while feeling mentally unwell, $t = -2.849$, $df = 103$, $p = .005$.

5.7.2 Mental Health and Physical Activity

In the bar chart below the horizontal axis represents whether the employee attended work while feeling mentally unwell and the vertical axis represents whether Physical Activity is encouraged by the employer. This chart indicates that when Physical Activity is encouraged by employers the majority of employees do not attend work while feeling mentally unwell.

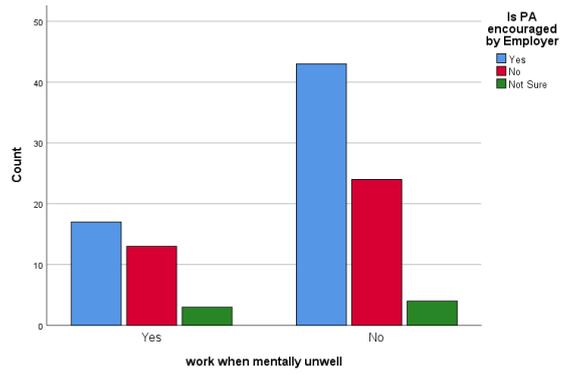


Figure 26: Bar chart representing the relationship between whether an employer encourages Physical Activity and whether an employee works when feeling mentally unwell.

5.8 The relationship between Absolute Presenteeism and Physical Activity

A multiple linear regression model was constructed to assess if there was a relationship between Absolute Presenteeism and the three different types of Physical Activity, in particular vigorous, moderate and walking.

The results of the multiple linear regression indicating that the variation within the three Physical Activity levels account for approximately 6.2% of the variation within Absolute Presenteeism ($r=.249$, $r^2=0.062$). The overall model was not statistically significant, $F(6,83) = 0.917$, $p= .487$. With respect to each independent variable none were statistically significant, the results of which are presented in **Table 29**.

Coefficients					
	Unstandardized Coefficients		Standardised Coefficients	t	Sig.
	B	Std. Error	Beta		
Model (Constant)	72.837	4.708		15.469	.000
During the last 28 days, on how many days did you do vigorous PA	.073	.349	.031	.209	.835
How many days did you do vigorous PA during your working day	-.522	.471	-.173	-1.107	.271
During the last 28 days, on how many days did you do moderate PA	.324	.322	.152	1.007	.317
How many days did you do moderate PA during your working day	-2.33	.390	-.095	-.597	.552
During the past 28 days on how many days did you walk for at least 10 minutes	-.023	.267	-.013	-.087	.931
How many days did you spend time walking during the working day	.329	.236	.225	1.393	.167

*Dependent variable: Absolute Presenteeism

Table 29: Looking at the statistical significance that Absolute Presenteeism has on the three PA types

5.9 The relationship between Relative Presenteeism and Physical Activity

A multiple linear regression model was constructed to assess if there was a relationship between Relative Presenteeism and the three different types of Physical Activity, in particular vigorous, moderate and walking.

The results of the multiple linear regression indicating that the variation within the three Physical Activity levels account for approximately 10.2% of the variation within Relative Presenteeism ($r=.320$, $r^2 =0.102$). The overall model was not statistically significant, $F(6,83) = 1.575$, $p= .165$. With respect to each independent variable only the amount of vigorous activity undertaken over the past 28 days was shown to be statistically significant, $t = -2.086$, $p=0.04$. The overall results of which are presented in **Table 30**.

Coefficients*					
Model	Unstandardized Coefficients		Standardised Coefficients	t	Sig
	B	Std. Error	Beta		
(Constant)	1.188	.096		12.428	.000
During the last 28 days, on how many days did you do vigorous PA	-.015	.007	-.305	-2.086	.040
How many days did you do vigorous PA during your working day	.014	.010	.217	1.421	.159
During the last 28 days, on how many days did you do moderate PA	-.005	.007	-.119	-.806	.422
How many days did you do moderate PA during your working day	.004	.008	.084	.538	.592
During the past 28 days on how many days did you walk for at least 10 minutes	-.006	.005	-.155	-1.048	.298
How many days did you spend time walking during the working day	-.001	.005	-.048	-.305	.761

* Dependent Variable: RelativePresenteeism

Table 30: Looking at the statistical significance that Absolute Presenteeism has on the three PA types

Chapter 6: Discussion

6.1 Introduction

This chapter will refer back to the original aims and objectives of the research and discuss the findings in relation to these.

The aim of this research was to look at the relationship between presenteeism and physical activity from the Irish perspective. This was achieved by only analysing data from the questionnaires that came from employees in the Irish workforce. Two respondents were working outside of Ireland therefore their data was discarded and eliminated from the analysis. Seeing as there is a lack of secondary data that concentrates on the relationship between presenteeism and physical activity from the Irish perspective it is hoped that this research can add to this area.

Objective 1: To identify if there is any significant relationship between the rate of presenteeism and the gender of the worker.

According to Bubonya *et al.* (2017) very little is known about gender differences in presenteeism. Analysis of this study showed that there was no significant difference between the average rate of absolute presenteeism among males and females ($t=.138$, $df=102$, $p=.890$). The mean rate of absolute presenteeism among males was 76.6% and among females was 77.12%.

An independent samples t-test also showed that there was no significant difference between relative presenteesim and genders ($t= 0.695$, $df=102$, $p=.489$). The mean rate of relative presenteeism among females was 1.00 and among males was 0.96.

This correlates with a study done by Bekker *et al.*, (2016) that looked at the rates of burnout and sickness presenteeism across genders in the nursing profession. In this study they took into account gender-relevant variables such as childcare obligations and job characteristics. They expected to see the rates of presenteeism as being highest in females due to emotional exhaustion but this was not the case. This study showed that women did not have higher rates of sickness presenteeism and absenteeism than men, in fact they were near equal.

When looking at whether employees went into work when they were feeling mentally unwell and comparing this across genders the study found that more females than males go to work when they feel mentally unwell (26 females versus 8 males). This may be due to the fact that women experience negative emotions more intensely than men (Fujita *et al.*, 1991). Or it could be as a result of women being less inclined to take the time to care for themselves when they are feeling unwell but instead try to keep going in order to fulfil their duty (Rosenfield and Mouzon, 2013).

Objective 2: To identify if there is any significant relationship between the rate of presenteeism and the age profile of the worker.

Dew *et al.*, (2005) discovered in his research that there is a variation in working through illness by gender and age, finding that older men and women reported higher levels of presenteeism. This was explained as being because the older generation are more likely to have chronic health conditions. However contrary to this finding Ilmarinen (2012) believes that evidence is showing that people are living longer without severe disabilities. And some research carried out by Christensen *et al* (2009) found that improvements in health and functioning can help the older population to remain healthy and valuable to an employer. Analysis of this research contradicts the research by Dew *et al.* (2005) as it shows that absolute presenteeism and relative presenteeism rates were highest in the older age groups, meaning that they were working at a higher performance level than the younger generations.

As the higher age categories have the highest levels of absolute and relative presenteeism this highlights the fact that these age groups are a valuable resource for an employer. The fact that they are more present and productive could be due to the fact that they no longer have young families that require much of their energy or hectic social lives like the younger generations. Therefore employers need to start thinking about the fact that the average age of our workforce is getting older and that strategies may need to be introduced in order to be more mindful of these employees. According to a census carried out in Ireland in 2016 the population of people aged 15-64 increased by 44,477 since 2011 and the number of people ages 65 and over increased by 102,174 bringing it to 637,567 (Central Statistics Office, 2017). The

life expectancy in Ireland is due to increase from 78.7 to 85.2 years in men and from 83 to 89.2 years in women, between the years 2013-2060. This increase in the older population is not just being seen in Ireland it is a global issue and it is projected to continue over the next few decades which can bring challenges to employers. Globally life expectancy is projected to rise from 70 years to 77 years by 2045-2050 and then rise again to approximately 83 years by 2095-2100 (UN, 2017). The implications of this would be that employees may choose to remain in the workforce for longer. Changes in the pension age may force some people to have to work longer but others may wish to remain in the workforce in order to maintain social contacts and in order to remain active and healthy (Staubli *et al.*, 2013).

Objective 3: To identify if there is a relationship between partaking in physical activity during the working day and the level of presenteeism an employee experiences.

Vigorous Physical Activity and Age Group

When looking at the relationship between those who partake in vigorous physical activity during the working day and the rate of presenteeism that they experience there seems to be a link when taking age into consideration. The results show that the younger age groups do more vigorous Physical Activity than the older age groups. However, with that said, the amount of vigorous Physical Activity done during a working day is proportionately less in the 18-24 year old age group than all the other age groups. When this finding is compared with the mean rates of presenteeism it produces some interesting findings. The mean rate of absolute presenteeism is highest in the older age categories and these categories are also the ones that do most of their vigorous activity at intervals during the working day. Therefore it is possible that there is a link between carrying out vigorous physical activity during the working day and an increase in the rate of presenteeism in the workplace.

This finding would correlate with the research undertaken by Sjogaard *et al.* (2016), where they introduced time for employees to partake in physical activity during the working day and concluded that physical exercise at work does in fact benefit both

the employee and the employer. In their research they discovered that employees saw improvements in their physical capacity and functions as well as a decrease in health risk indicators. They also highlighted that by providing the time for employees to participate in physical activity in the workplace employers saw a decrease in absenteeism and presenteeism, measured by an increase in productivity and work ability.

Vigorous Physical Activity and Gender

An independent samples t-test was undertaken to determine if there was a statistical difference between the average vigorous Physical Activity carried out between females and males. The results of the independent samples t-test indicated that there was a statistical significant difference ($t = -3.077$, $df=91.348$, $p=.003$). The average number of days that the males participated in Vigorous Physical Activity was 10, of those 10 days 6 days were during the working day, representing 60%. While the average number of days that the females participated in Vigorous Physical Activity was 6, of those 6 days 2.5 days were during the working day, representing 42% of their vigorous PA. Therefore males do more vigorous Physical Activity than females. Males also do more of their Vigorous Physical Activity during a working day than females.

However if we combine this finding with our finding in relation to the rates of relative and absolute presenteeism across genders this does not show any significance. The rates of presenteeism across genders are similar therefore the fact that men do more vigorous physical activity during the working day than women does not seem to have an effect on their rate of presenteeism. Therefore there is insufficient evidence to allow us to draw any firm conclusion in relation to the relationship between physical activity carried out during the working day and the rates of presenteeism experienced by employees.

Objective 4: To identify if there is a relationship between walking and age and gender-

This research showed that of all the physical exercise types walking was by far the most popular. When asked to state how many days they would walk for at least 10 mins in a 28 day period 41.9% of respondents reported that they would walk everyday. And the average number of minutes that they would spend walking each day would be 30-40 mins. These statistics show that many people already enjoy walking and therefore this knowledge could be used to encourage further physical activity.

An analysis of variance was undertaken to determine if the average number of days where walking took place was different between age groups. The results of the analysis of variance indicating that there was a statistical significant. The youngest age group did the least amount of walking and those in the age range 25-44 did the most amount. This correlates with research by Satariano *et al.* (2012) that found that walking was the most popular form of exercise among the older population. This may be due to the fact that it is not as strenuous on your joints as other forms of physical activity.

Analysis also showed that females carry out more walking than males. This is good news as according to Grazi *et al.* (2020) cardiovascular disease is one of the main causes of death in females and walking is an important health behaviour that can significantly reduce or postpone morbidity and mortality (Murtagh *et al.*, 2015). Brown *et al.* (2012) reports that 40% of women report low levels of physical activity compared with only 27% in men therefore walking is particularly important in relation to women. Women need to build physical activity into their daily life and walking is a very good way of doing this.

Objective 5: To identify if employees go to work when feeling mentally unwell and to identify if employees feel that their workplace has any impact on their mental health.

According to the WHO, Global Burden of Disease report (2008), mental disease is one of the leading causes of disease burden worldwide and this is set to rise even further in the coming decade. The OECD (2012) estimate that one in every five working-age adults has a mental health problem. And it states that the majority of

these people with mental health issues continue to work while experiencing these issues. These are important statistics for employers as research shows that employees suffering from mental health issues are less productive in the workforce than those without. Therefore having employees who are suffering from mental health issues can prove costly to an employer.

This correlates with the findings in this research, where 32.4 % (34) of respondents in the survey stated that during the past 12 months they did go to work when they felt mentally unwell. The average number of days that they reported to go to work when feeling mentally unwell was 22.71 days in a 12 month period. If an employer had multiple employees not working to their full potential on 22.71 days of the year this could prove quite costly.

Analysis also shows that 33.3% (35) of respondents stated that they felt that work affected their health negatives and according to Virtanen *et al.* (2007) stress at work can lead to mental disease. Therefore, more than ever, employers have a duty of care to make sure that their employees are being looked after and that their welfare is taken into account. By doing this not only will an employer reduce presenteeism and increase productivity but they will also benefit from an improved relationship with its employees which will strengthen the organisation as a whole. They will improve morale, confidence and self-esteem among its employees.

Objective 6: To identify if employees use physical activity to help them to maintain their Mental Health

In this research when participants were asked to plot on a likert scale why they engaged in physical activity, 60% (63) stated that it was very true for them to engage in physical activity as they wanted to maintain their physical health and wellbeing. 48.6% (51) stated that it was very true for them to engaged in physical activity to destress. These statistics show that employees are in tune with their mental health and that they have identified physical activity as a way of supporting it. This supports the theory by Biddle (2003) that physical activity can enhance an individual's perception of themselves and that this can help in the prevention of mental health illnesses and stress.

There are many ways in which an employer can look after its employee's mental health. In a report published by the U.S. Department of Health and Human Services, it finds that the benefits associated with being physical activity go way beyond disease prevention. They state that physical activity also provides benefits that help a person to feel better and perform daily tasks more easily (PAGAC, 2018). This report explains that even a single episode of physical activity can have an immediate effective on a person's executive function. It improves the function in the brain that allows a person to organise and plan more easily. It also helps memory, academic performance, attention span and the control of emotions. Therefore, this research shows that a person will be more alert and productive on the days that they are physically active. Coulson *et al.* (2008) conducted a study that shows similar findings. These findings suggest that employee's tolerance and resilience were increased on days where they were physically active.

Research Objective 7: To identify if employee themselves place any value on having a workplace that encourages and supports physical activity and if employers would themselves benefit from encouraging and supporting physical activity in the workplace

In this research the survey results showed that employees do place a value on physical activity as they wish to work in an environment where it is supported. 70.5% (74) of respondents stated that it was important to them to work in an environment where physical activity was encouraged. But only 35.2% (37) believe that their workplace encourages and supports physical activity. Therefore, not all employers are fulfilling employee's needs. This highlights a risk for employers, as employees may leave to join a company that puts more focus on employee health and wellbeing. According to Russell *et al* (2018) 73% of millennials admitted that a good workplace wellness programme would sway them when considering potential employers. This is why companies like Pfizer design Healthy Directions and Wellness Programs to help to attract, develop and retain its talented employee population (Bruno, 2005).

The fact that only 35.2% of respondents felt that their workplace encourages and supports physical activity correlate with research by Evan-Lacko and Knapp (2016) that found that only 30 % of large companies are investing in wellness policies. This also reinforces research by Engbers *et al.*, (2005) that found that many employers who do adopted work place wellness programmes mainly concentrated on stress management and nutrition behavioural changes and neglected physical activity behaviours. This gap in wellness programmes needs to be addressed. Employers need to realise the power that physical activity has and that it can transform an employee in ways that will benefit them personally but also benefit the employer.

Objective 8: To identify if there is any significant relationship between the level of physical activity an employee part takes in and the level of presenteeism that they experience.

Two multiple linear regression models were constructed to assess if , firstly, there was a relationship between absolute presenteeism and the three different types of physical activity, in particular vigorous, moderate and walking and, secondly, if there was a relationship between relative presenteeism and the three different types of physical activity.

Both multiple linear regression models showed that overall there was no significant relationship between presenteesim and physical activity. The results indicated only 6.2% of the variation of absolute presenteeism was understood when using the three different forms of physical activity as the independent variables. Therefore, physical activity does not help us to understand absolute presenteeism.

Similarly, when taking relative presenteeism as the dependent variable, only 10.2% of the variation in relative presenteeism was understood when taking the three different forms of physical activity as the independent variable. Therefore, physical activity does not help us to understand relative presenteeism either.

As a result, the null hypothesis is true for this body of research. That is, that there is no evidence that there is a difference between the levels of presenteeism in employees that are regularly physically active versus those that are not.

The link between the amount of physical activity an employee part takes in and the rate of presenteeism that they experience may not have been strong enough to produce any sufficient finding but physical activity has shown to be beneficial in other ways. Employees have stated that it helps them to restress and care for their mental wellbeing. It is also widely proven to be beneficial to your physical and overall health. Therefore, employers should still consider physical activity to be an important activity that should be encouraged and supported.

Chapter 7: Conclusion

This dissertation involved an exploration into the relationship between physical activity and presenteeism in the Irish workforce. The literature review outlined the academic studies around physical activity, wellness initiatives, mental health in the workplace and presenteeism. It was acknowledged that whilst a large body of academia surrounds presenteeism, not much of it explored the link between physical activity and presenteeism. Another gap in academia that was discovered was that little research existed in relation to presenteeism in the Irish workforce.

Self-administered questionnaires were developed in order to gain a broad range of results across the whole working population in Ireland. This allowed for the examination of smaller differences that developed from the responses while always providing a consistent method of approach for assessing these differences.

The responses to this questionnaire were analysed using SPSS and the key finding was that there was not sufficient evidence to suggest that there is a difference between the levels of presenteeism in employees that are regularly physically active versus those that are not.

The link between the amounts of physical activity an employee part takes in and the rate of presenteeism that they experience may not have been strong enough to produce any sufficient finding but physical activity has shown to be beneficial in other ways. Employees have stated that it helps them to restress and care for their mental wellbeing. It is also widely proven to be beneficial to your physical and overall health. Therefore, employers should still consider physical activity to be an important activity that should be encouraged and supported.

7.1 Recommendations

1. Taking these results into consideration employers should consider the long term benefits of introducing initiatives in order to encourage more physical activity among its employees. They could consider providing protective time for employees to partake in physical activity during the working day. Even allowing employees to have an extra 10-15 minutes at lunchtime could make a big difference, giving

employee's time to conduct some physical activity while still having time to shower and eat their lunch. A seemingly small allowance like this could make a huge difference as many employees could be reluctant to exercise at their lunchtime as they feel that they would not have enough time.

2. It is important for employers to encourage their employees to be more physically active in order to plan for the future. The benefit of having a healthy, productive workforce far out ways the cost of implementing a good wellness programme. Other research conducted by The Health Enhancement Research Organisation reported that employees were 123 per cent more likely to have high rates of presenteeism if they felt that their employer had no interest in encouraging them to be more physically active (HERO,2013). Therefore, employers should ensure that physical activity initiatives are included in their wellness programmes.
3. Employers should create a culture within its workplace where physical activity is encouraged and supported. Employees should be made to feel that they are encouraged to be mindful of their mental health and supported in taking steps in order to care for it. Not all employers would have the budget to be able to provide the likes of gym membership and yoga classes to its employees. But other less costly amenities could be provided, such as a safe place to store bikes, an empty room that could be used by employees to exercise, stretch or chill out, shower facilities.
4. It is much easier to encourage people to be more active if it is to partake in a form of physical activity that they already enjoy. Therefore, employers should use this finding to encourage its employees to do more walking. It could organise a steps challenge with a prize for the winning team or individual. They could encourage lunchtime group walks. Making this a fun experience could encourage those who currently do not participate in walking to join in, creating healthy habits among staff.
5. Employers need to consider strategies in order to identify the needs of the ageing workforce. They need to ensure that they are taking their needs and health into account and take steps to make their working lives more comfortable. According to McCarthy *et al.*, (2014) finding solutions to the implications of having an older

population as the dominant demographic group in the workforce is something that needs to be addressed quickly. A large scale study carried out by Aviva examined workplace wellbeing and they discovered that nearly a third of employers are already seeing a rise in the age of their average worker (Aviva, 2012)

6. According to Bubonya *et al.* (2017) employers need to identify ways of adapting their policies and practices in order to be more inclusive and supportive of employees who are experiencing mental illness. Based on this research a recommendation to all employers would be to re-evaluate their policies and practices, looking at them from the mind set of an employee who is suffering from mental health issues, and see what changes need to be made in order to take their needs into account.

7.2 Suggestion for Further Research

A recommendation for further research would be to explore why employees experience presenteeism at work by asking the employees themselves to report on what they feel contributes to their presenteeism. This would give further insight into the causes of presenteeism and help employers to get a deeper understanding of employee behaviours.

Another recommendation for further research would be to look at the changes in working patterns since the arrival of the COVID-19 pandemic, and to compare these new working styles with rates of presenteeism. With the majority of employees working from home, does this allow them the flexibility to work in a way that is more productive or less.

7.3 Costs of Implementing Recommendations

Introducing wellness initiatives can be as costly as the employer can afford. Many large employers invest heavily in this area as they are seeing a huge return in their investment. But this is not necessary.

The recommendations that have been suggested in this body of research focus more on investing time and resources into the area of wellness rather than investing lots of money on costly ventures. It would involve assigning man power and resources to creating and implementing new policies and re-evaluating existing policies in order to make them more inclusive and supportive of employees.

It would also involve dedicating more time to communicating with employees, showing support and encouragement for them to be physically active. This would help in slowly changing the culture of the organisation.

It would also involve being more lenient when it comes to the amount of time taken during lunch to exercise. The cost of the time spent away from work would be money well spent as employees will return to their desks with more energy and therefore they will be more productive in the long run.

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APPENDICES

Appendix 1: Questionnaire

Physical activity and presenteeism

Welcome to my survey 'An Exploratory study into the relationship between physical activity and presenteeism in the Irish workforce'. This survey is being undertaken for the purpose of research, as part of a masters program in Human Resource Management. All the information that is provided will be kept confidentially and coded as such. There are 18 questions in total and this should take no longer than 5 minutes to complete. For more information about this survey please contact Aoibheann O'Malley at The National College of Ireland. Contact details: x18149804@student.ncirl.ie. Many thanks in advance for completing this survey.

Consent

By clicking on the box I confirm that:

I voluntarily agree to participate in this research study.

I understand that I will not benefit directly from participating in this research.

I understand that all information I provide for this study will be treated confidentially.

I understand that my personal data that has been provided will be used for the purposes described in the introduction above.

1. What is your gender?

- Male
 Female

2. What is your age?

- 18-24
 25-34
 35-44
 45-54
 Over 55

3. In what area do you work?

- Public Sector
 Private Sector
 Self-Employed

Next >

4. During the last 28 days, on how many days did you do vigorous physical activities such as aerobics, fast cycling, running?

[Please select an answer] 

4b. On average about how much time did you usually spend doing vigorous physical activities on one of those days?

- 10-20 minutes
- 21-30 minutes
- 31-40 minutes
- 41-50 minutes
- more than 50 minutes

4c. On average, during the past 28 days, on about how many days would you do vigorous physical activity at some stage during your working day?

[Please select an answer] 

5. During the past 28 days, on how many days did you do moderate physical activities like cycling at a regular pace, tennis, yoga, swimming? Do not include walking in your answer

[Please select an answer] 

5b. On average about how much time did you usually spend doing moderate physical activities on one of those days?

- 10-20 minutes
- 21-30 minutes
- 31-40 minutes
- 41-50 minutes
- more than 50 minutes

5c. On average, during the past 28 days, on how many days would you do moderate physical activity at some stage during your working day?

[Please select an answer] 

6. During the last 28 days, on how many days did you walk for at least 10 minutes at a time?

[Please select an answer] 

6b. How much time did you usually spend walking on one of these days?

- 10-20 minutes
- 21-30 minutes
- 31-40 minutes
- 41-50 minutes
- more than 50 minutes

6c. On average, during the last 28 days, on about how many days would you spend time walking (for at least 10 minutes) at some stage during your working day?

[Please select an answer] 

7. The following is a list of reasons why people engage in physical activities, sports and exercise. Keeping in mind your primary physical activity/sport, respond to each question (using the scale given), on the basis of how true that response is for you.

	1 Not at all true for me	2	3	4	5	6	7 Very true for me
7a. Because it is fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7b. Because it makes me happy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7c. Because I want to have more energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7d. Because I want to improve my appearance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7e. Because I enjoy spending time with others doing this activity	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7f. Because I find this activity stimulating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7g. Because I want to maintain my physical strength to live a healthy life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7h. Because I want to maintain my physical health and well being	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7i. Because it de-stresses me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. In your opinion does your workplace have an environment where physical activity is encouraged and supported?

- Yes
 No
 Not sure

If yes, in which way

	Yes	No
8b. Do they provide a safe area for you to store your bike?	<input type="checkbox"/>	<input type="checkbox"/>
8c. Do they have shower facilities?	<input type="checkbox"/>	<input type="checkbox"/>
8d. Do they supplement your gym membership?	<input type="checkbox"/>	<input type="checkbox"/>
8e. Do they provide a space for workplace exercise?	<input type="checkbox"/>	<input type="checkbox"/>
8f. Do they provide pedometers?	<input type="checkbox"/>	<input type="checkbox"/>
8g. Do they allow you to take time during the day to be physically active?	<input type="checkbox"/>	<input type="checkbox"/>

9. Is a workplace environment where physical activity is encouraged and supported important to you?

- Yes
 No

10. Approximately how many hours altogether did you work in the past 28 days? NUMBER REQUIRED

How many hours did you work in the past 28 days?

11. Approximately how many hours does your employer expect you to work in a typical 28 day period? (If it varies, estimate the average) NUMBER REQUIRED

How many hours does your employer expect you to work in a typical 28 day period?

12. Now please think of your work experience over the past 4 weeks (28 days). In the spaces provided below, write the number of days you spent in each of the following work situations. In the past 4 weeks (28 days), how many days did you.... NUMBER REQUIRED

12a. Miss an entire work day because of a problem with your physical or mental health? (please include only days missed for your own health, not someone else's health.)

12b. Take an annual leave day?

12c. Miss part of a work day because of problems with your physical or mental health? (Please include only days missed for your own health, not someone else's health)

12d. Take a half day's annual leave?

12e. Come in early, go home late, or work on your day off?

13. On a scale from 0 to 10 where 0 is the worst job performance anyone could have at your job and 10 is the performance of a top worker, please answer the questions below.

0 1 2 3 4 5 6 7 8 9 10
Worst Performer Top Performer

13a. On a scale from 0 to 10 where 0 is the worst job performance anyone could have at your job and 10 is the performance of a top worker, how would you rate the usual performance of most workers in a job similar to yours?

13b. Using the same 0-10 scale, how would you rate your usual job performance over the past year or two?

13c. Using the same 0 - 10 scale, how would you rate your overall job performance on the days you worked during the past 4 weeks (28 days)?

14. Over the past 12 months did you work when you were physically unwell?

- Yes
 No

15. If yes, on approximately how many days? NUMBER REQUIRED

If yes, on approximately how many days?

16. Over the past 12 months did you work when you were mentally unwell?

- Yes
 No

17. If yes, on how many days NUMBER REQUIRED

If yes, on approximately how many days?

18. In your opinion does your work affect your health?

- Yes, mainly positive
 Yes, mainly negative
 No

The survey is now complete. If you are satisfied, please select the submit answers button below to save your answers and exit the survey.

Thank you for your responses.

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[Submit Answers](#)

Appendix 2: Personal Learning Statement

The experience of writing this dissertation has taught me a lot. I learnt how to create a questionnaire and how important it was to have good clean data in order to produce good quality analysis. I also learnt how to analyse data using SPSS, this was probably the biggest undertaking of the dissertation.

As well as these practical learnings I also learnt a lot about time management. Trying to work full time, home school children and write a dissertation was definitely testing and very stressful at times. I am delighted with my achievement and look forward to having lot's more free time.