

**The relationship between exercise and self-esteem,  
sleeping patterns, anxiety and energy levels.**

**Student Name: Sarah Staples**

**Student Number: 1656022**

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**Supervisor: Dr Bernadette Quinn**

**Head of Department: Dr Bernadette Quinn**

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**Department of Social Science**

**DBS School of Arts**

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**Thesis title:**

The relationship between exercise and self-esteem, sleeping patterns, anxiety and energy levels.

**Abstract**

This thesis aimed to research the relationship between exercise and self-esteem, sleeping patterns, anxiety and energy levels. The sample size consisted of 200 participants of males and females from ages 18 to 63 years. Data was collected by a questionnaire booklet containing 4 sections of questionnaires. These questionnaires were distributed among Dublin college students and online using [www.surveymonkey.com](http://www.surveymonkey.com). A quasi-experiment research design was used. The independent variable was the fitness level of the participants, which was estimated based on the amount of exercise that they performed weekly: the more exercise they did the higher their resultant fitness would be. The dependent variable was the measurement of various physiological and psychological factors in the groups. Psychological factors include energy, sleeping patterns, self-esteem and anxiety. Physiological factors include type of exercise and hours of exercise per week. A correlational analysis was used to test the relationship between the groups' exercise levels and their self-esteem, anxiety, sleep and energy. The results did not match three out of the four predicted hypothesis (#s 1, 2, and 4) in this present research, showing a positive correlation between exercise levels and both anxiety and energy levels, and a negative correlation to both self-esteem and better sleeping patterns.

## **General Introduction and the importance of this present research topic:**

The purpose of this present research is not only to highlight that people in the current generation have become less active, but that the problem of depression, anxiety and self-esteem is still a worldwide issue (WHO, 2014). This literature review contains the following four themes: statistics on the amount of participation in exercise, treating anxiety and depression with exercise, exercise and self-esteem and the effects of exercise on daily energy drive and sleeping pattern. Studies such as The Office for National Statistics Psychiatric Morbidity report, 2001 and Mental Health in Ireland report, HSE, 2007 have inspired the themes and topic of this present research. Further studies by the American Psychological Association, (2014) show that exercise can be used as a treatment for patients with psychological problems. This will now be discussed in depth.

Furthermore, researchers have found that about a quarter of the British population will experience some type of mental illness during the course of the year, with anxiety and depression at the top of the list. In Ireland, depression affects one in five older people (The Office for National Statistics Psychiatric Morbidity report, 2001). Similarly, the National Office for Suicide Prevention accounts for up to 30% of consultations with general practitioners in Europe to be mental health (Mental Health in Ireland report, HSE, 2007). Additionally the same report by the HSE showed that Ireland has serious self-harm and suicide problems with up to 500 suicide deaths a year (Mental Health in Ireland report, HSE, 2007). Studies are increasingly showing that exercise can affect the psychological well-being of people. For example, a study was recently approved by Melbourne Health Human Research and Ethics Committee performed by Parker, Hetrick, Jorm, Yung, McGorry, Mackinnon, Moller, & Purcell (2011) which will be discussed further in this literature review.

Studies are also showing that the level of people taking part in regular exercise is low which is why this study is very relevant. The National Survey of Lifestyles Attitudes and Nutrition (SLÁN 2007) showed that only just over 40% of Irish adults took part in moderate or strenuous physical activity for at least 20 minutes three or more times a week (HSE, 2008). In Thomas's book of Physical Activity and Health, exercise is defined as a 'planned, structured and repetitive bodily movement done to improve or maintain one or more components of physical fitness' (Brown, Thomas & Kotecki, 2002). So therefore, exercise is an action which must be repetitive to have a long term effect, which will be shown in the following studies.

### *Statistics on the amount of participation in exercise*

A household study was completed by the CSO in 2006 which reported that 37% of the individuals over the age of 15 admitted they did not take part in physical activity in the previous year. Results also showed 15% with poor health problems participated in physical exercise in comparison to 76% of participants with good health declared they participate in regular activities. These stats alone show that exercise can help people maintain a healthy lifestyle. There was also a gender difference of 3% more women than men that participated in physical activity (CSO, 2007). It was found that the reason people did not take part in exercise was because of a lack of free time due to work obligations which occurred more in men than in women. Additionally, this study showed that 58% of those who exercise regularly do so in order to improve health (CSO, 2007). In both adults and children, many health risks are reduced by exercise, such as coronary heart disease, cancer and depression, which has been found by many organisations, such as The American Heart Association (2013) the Irish Heart Foundation (2013), and the Mayo clinic (2011) to name a few. These studies have also found that many health risks in both adults and in children are reduced by exercise, such as coronary heart disease, cancer and depression.

Recently the American College of Sports Medicine (ACSM) made a critical call to health care providers and primary physicians to include physical activity in their patient care plans. People need to be more educated on the effects of exercise (ACSM, 2004). It is estimated that approximately 450 million people worldwide have a mental health problem (World Health Organisation, 2001). Measures need to be taken to stop this rising. Positive well-being and health promotion is becoming increasingly associated with continuous physical exercise (The Melbourne Health Human Research and Ethics Committee, 2011). Recently, exercise has been used more commonly as a part of medical care plans to treat patients with depression and anxiety (WHO, 2005). The promotion of positive mental health is concerned with the enhancement of well-being among the general population (WHO, 2005).

In conclusion, health risks are shown to be reduced by exercise, and additionally those that exercise more have less health risks (CSO, 2006). In order to promote physical activity into peoples' daily routines, they need to be more educated on the positive effects it can have and, as mentioned above, physical activity should be included in patients care plans (ACSM, 2004).

### ***Treating anxiety and depression with exercise***

According to the World Health Organisation, mental health is defined 'as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community' (WHO, 2014). Considering anxiety and depression are the most common form of mental illness, every healthy solution to helping people live a fulfilled positive life is necessary (WHO, 2014).

The majority of treatment plans use Cognitive Behavioural Therapy (CBT) (Parker et al, 2011). However, a recent study was approved by the Melbourne Health Human Research and Ethics Committee and registered by the Australian New Zealand Clinical Trials Registry (2011). The study was performed by Parker et al. (2011). The study aimed to evaluate if less intense treatments for anxiety and depression can be just as effective as CBT. Over a period of time, one hundred and sixty participants were gathered from a low threshold mental illness clinic in Melbourne, Australia. They had all been submitted for mild mental illness and they were between the ages of fifteen to twenty-five. Some of the service users preferred not to inform their caregivers that they were receiving help for mental illness. Furthermore, those under the age of fifteen were excluded from the study immediately.

The experimental design was factorial Randomised Controlled Trial (RCT) which is where the participants are randomly assigned to take part in one treatment or another. In this case there were four combined treatments for their illnesses which included psychological intervention, through the use of problem solving therapy and counseling, and exercise intervention through the use of behavioural exercise and psychoeducation. The participants were monitored specifically at three stages throughout the experiment and assessed by using Beck Depression Inventory (Beck et al.1961) and anxiety intervention. After six weeks the participants were examined and it was found that exercise as a behavioural therapy can be a benefit to helping people deal with anxiety and depression symptoms. There was also a twelve month follow up prior to this trial (Parker et al., 2011). In conclusion, this was an interesting study to look at because the majority of treatments have used Cognitive Behavioural Therapy (CBT). Caregivers in mental treatment institutions can greatly benefit

from this type of study by taking the time to set an exercise programme in addition to other treatments they are already using.

Another interesting study was carried out by Martinsen, Medhus, and Sandvik (1985). They studied forty-three patients of both sexes aged seventeen to sixty years. These participants suffered from major depression. There were two groups allocated, one that performed exercise and one that did not. The group that was physically active participated in a total of nine weeks of exercise for one hour a week, three times a week. The control group attended occupational therapy while the other group exercised. Depression was assessed with the Beck Depression (1961) inventory after three, six and nine weeks. The results found that there was a reduction in depression levels and an increase in maximum oxygen uptake in the group that exercised (Martinsen, Medhus, and Sandvik, 1985). However, this study did not take into account whether or not the participants had exercised before they took part in this research, nor their levels of fitness. Exercise can be used as a distraction from negative thoughts.

Similarly, research performed by the American Psychological Association (2014) explored the changes in psychological states in people with depression and schizophrenia as opposed to people with no psychological health conditions both during and after exercise. The sample included twenty patients with schizophrenia, thirteen patients with depression and twenty people with no mental illnesses. Furthermore the results showed that all three groups improved in positive affect and well-being fifteen minutes after high intensity exercise, however only patients with depression had maintained the effect after three hours (Heggelind et al. 2014).

### *Exercise and self-esteem*

Self-esteem is the opinion that people have of themselves (Ekeland, Heian, Hagen, 2004). Having a good or bad opinion of one self may motivate one to exercise. Studies have shown that women are more likely to exercise than men to increase their self-esteem and create a better appearance (Silberstein et al. 1988). Tiggema and Williamson (2000) conducted a study which included a total of two hundred and fifty-two participants. The aim of the research was to measure the relationship in the amount of exercise and psychological well-being in a broadly based sample. The participants were between the ages of sixteen and sixty. They were divided into four groups based on their gender and age. Each group was given a questionnaire based on their feelings on their self-esteem and why they participated in exercise. The results found that young women did not exercise because of reasons of low self-esteem, but the rest of the sample (young and old men, older women) exercised for reasons such as weight control, tone and to feel in a better mood (Tiggeman & Williamson, 2002). It has been found that better fitness leads to feelings of physical worth as exercise improves self-esteem perception (McAuley et al. 2000).

Additionally, a further study by Bhuwan (2012) claims that obesity is a result of a lack of exercise. It was carried out to assess the impact of physical exercise on BMI and self-esteem of obese people in the urban slum of Mumbai. The research was conducted at Cheetah Camp slum which is a field practise area of the department of Preventive and Social Medicine, TN Medical College Mumbai. There were a total of three hundred and fifty participants all above the age of forty. Just over sixty-four percent of the obese participants were females. The data was collected by interviews and questionnaires. People suffering from obesity reported to have bad blood pressure and uncontrollable blood sugars. The results revealed that just over fourteen percent of participants had low self-esteem, which was more common in females by

seventy percent. People that had high self-esteem had a Body Mass Index of less than twenty five kilo grams meters squared. Furthermore, obesity can develop many negative life difficulties such as depression. People need to be more educated on the effects of obesity and how to prevent it by encouraging daily exercise (Bhuwan Sharma et al. 2012).

However, contradictory to all these findings, a recent study was performed which showed that there was no significant relationship between physical exercise and psychological well-being. It included sixty five DBS students aged eighteen to forty years of age. It was a quantitative research design. Questionnaires were given to all participants and results were assessed against the Psychological General Well-being Index (Dupuy 1984) and the Body Esteem Scale (Franzoi & Sheields, 1984). There was also no difference in gender results. On the other hand there was no correlation between physical exercise and self-perception (McGuirk, Ethan, 2012).

When assessing participant's self-esteem, it must be taken into consideration that because they may suffer from low self-esteem they may not have the confidence to be honest about how they perceive themselves. Data collection must therefore be kept highly confidential.

Considering the growing use of technology and the display of the 'perfect woman or man', low self-esteem issues are affecting young adolescents more and more. A recent government report was released by the Department of Health and Children called the 'State of the Nation's Children-Ireland 2006'. It revealed that a little over half of the children population ages between eight and eleven are unhappy with how they see themselves compared with only a quarter of adolescents aged twelve to seventeen. More boys reported feeling happier than girls (DOHC, 2006). The report showed that in 2002 just over 87% of children reported

that they were physically active for two days or more per week. This was higher for boys than girls (DOHC, 2006). It was interesting to see that forty-seven percent of all children aged ten to seventeen said they took part in physical exercise for at least sixty minutes per day on more than four days per week. This again was shown to be higher for boys than for girls. There is a significant difference in the level of exercise and a drastically low percentage of children happy with how they are, and this does not show that exercise enhances children's self-esteem. On the other hand, other issues must be taken into consideration that may affect their self-esteem such as the level of exercise, personal issues, social media and individual circumstances (Department of Health and Children, 2006).

Further studies will be analysed. Between 10% and 20% of children and adolescents have psychological and behavioural difficulties and about 70% need psychological treatment. Exercising can keep the mind distracted from these problems. It may not cure them, but studies such as 'Promoting positive postpartum mental health through exercise in ethnically diverse priority groups. Diversity & Equality In Health & Care' (Row, Nevill, Bellingham-Young, & Nabuco Adamson-Macedo, 2013) are showing that it is a coping method. It encourages the mind to use its energy on the physical activity rather than the psychological problem.

In contrast with this, in 2005 a research project was carried out by Ekeland, Heian and Hagen (2005) which was an analysis of seven thousand two hundred and ninety nine citations. The research was restricted to randomised controlled trials and quasi-randomised trials. The aim of the research was to see if exercise interventions can improve self-esteem among children. The ages varied from children of three years of age to adults of twenty years old. People with psychotic conditions were ruled out. Self-esteem was measured with similar instruments

throughout the studies. The interventions included aerobic exercise, jogging, running, dance and traditional physical education. The outcomes were measured at end of the interventions. The results were coded and meta-analytic procedures were carried out.

In conclusion, the overall results showed that exercise can improve self-esteem in children and in young people (Ekeland, Heian, Hagen, 2005). The rate of mental illness in children is high, however, the idea of exercise as a coping method is unknown. This study brings a focus on the importance of the necessity to design randomised controlled trials with long term follow up. This study also led to evaluate that negative body image can cost a lot of money for people in regards to plastic surgery, spending time at salons, gym memberships and fitness protein ingredients (Ekeland, Heian, Hagen, 2005).

***The effects of exercise on daily energy drive and sleeping pattern.***

Feelings of restlessness and low energy are a result of bad health (Bower et al. 2000). A quarter of the population reports to have low daily energy levels (Lewis & Wesley, 1992). As a result of this, people may use boost supplements and intake sugar drinks to get through their daily tasks. This can energise people for a certain amount of time, but it can have later life health risks (O'Connor & Peutz, 2005). In accordance to these findings, a critical study was carried and published in the Journal of Sport Sciences which aimed to test the effect of different levels of exercise on fourteen female students. All sedentary women complained of feelings of low energy levels. There were three levels of exercise: high intensity, moderate intensity and no exercise. Their moods were recorded every eleven and forty minutes before exercise and during, and every twenty and thirty minutes after conditioning. The data showed a significant difference for feelings of energy drive and better feeling of boost after exercise and during. Both moderate and high intensity levels of exercise gave better energy levels, but

the controlled group remained the same (Herring & O'Connor, 2009). This study showed obviously effect in change of energy levels, but the scientist could not prove if this was a result of the placebo effect or if exercise really made a difference.

In relation to exercise improving an individual's sleep pattern, a study was carried out by Caldwell, Harrison, Adams, Quin and Greeson (2010) to examine whether mindfulness increased through participation in movement-based courses and whether there were changes in self-regulatory, self-efficiency, mood and sleep. This study revealed that Pilates (a form of exercise) gained a better daily mood which in accordance gained a better sleep at night (Caldwell, Harrison, Adams, Quin & Greeson 2010). When energy is expended on exercise, it can also help lead to a better night's sleep as it uses energy that would otherwise keep some people awake at night.

Some would think that using energy would make you more tired throughout the day but studies have shown that exercising can moderate these feelings. Pueetz et al (2005) reported on thirty-six young adults with no diagnosed illnesses or disorders but that did complain about feelings of restlessness. They were randomly assigned into three groups of moderate-intensity exercise, low-intensity exercise and no treatment control group. In the duration of a six week period, participants from each group went to the exercise laboratory on eighteen occasions for exercise sessions. Their levels of fitness were measured before and after. It was interesting to see the results showed that the change in the levels of feelings of fatigue depended on the intensity of the exercise. Additionally, the increased level of intensity resulted in more participants feeling a higher energy level. (Peutz et al. 2006).

Studies such as Caldwell, Harrison, Adams, Quin & Greeson (2010) have shown exercise can relieve stress levels and anxiety which also improves sleep quality. In one recent study Peutz et al (2008) looked at the effects of exercise on sedentary women and men in their sixties who had been diagnosed with insomnia. The study was over a sixteen week period which consisted of participants taking part in exercise interventions and monitoring their quality of sleep over the duration. It was found that the participants' sleep did improve, but only after the sixteen week period. In conclusion to this result, continuous exercise improves quality of sleep, but not just one session of exercise (Peutz et al. 2008).

The following study by Baron et al. (2013) was performed only on eleven women. It aimed to investigate whether exercise improved sleep problems due to insomnia. The participants engaged in thirty minutes of aerobic exercise three times per week. Progress was monitored by exercise and sleeping quality logs and wrist activity was monitored during sleep. Sleep was assessed by total minutes of sleep time, sleep efficiency, wake after sleep time and fragmentation index. Unlike the other study discussed, results showed that there was no correlation with between sleep quality and exercise sessions but scientists did find that sleep determined the next day's exercise motivation. This is interesting to look at because it shows sleep deprivation can have an impact on a person's next day performance. Further study could be done to see if a person sleeps better, whether they would be more motivated to exercise, which in the long term could prevent depression (Baron et al. 2013).

### ***Conclusion***

Positive actions, like exercise, can be taken to prevent both present and future life problems, as shown in the following studies. Physical exercise is a key concept to leading a healthier, longer life. According to the World Health Organisation, "Health is a state of complete

physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2014), with an emphasis on the word physical. Health is not just about biology but also about mind (Brown, Thomas & Kotecki, 2002). The studies in this lit review have explored other ways of treating anxiety and depression however this does not mean exercise is the cure it is only an addition (Parker et al, 2011). People need to be more educated on the benefits of exercise to realise this (American College of Sports Medicine, 2004).

### *Aims*

This current research study aims to measure the effect that exercise has on the levels of anxiety, depression, self-esteem, sleeping patterns and energy levels in people. Information on peoples’ exercise habits will be collected and the results will be used to produce a broad outlook on the different lifestyles that the average student lives today. Questionnaires will be based around anxiety, depression, self-esteem and sleeping patterns/energy levels. Many recent studies and findings have inspired this present study to occur, for example, Caldwell, Harrison, Adams, Quin & Greeson (2010) and Ekeland, Heian, Hagen (2005). These studies have been analysed and assessed on their aims, methods and results.

### *Hypothesis*

The first hypothesis predicts there is a positive relationship between self-esteem and exercise. The second hypothesis predicts there is a positive relationship between energy and exercise. The third hypothesis predicts there is a negative relationship between anxiety and exercise. The fourth hypothesis predicts there is a positive relationship between self-esteem and exercise.

## **Methods**

### ***Design***

A quasi-experiment research design was used. The criterion variable was the fitness level of the participants. Their fitness level was estimated based on the amount of exercise that they performed weekly: the more exercise they did the higher their result and fitness would be. The predictor variables were the measurements of various physiological and psychological factors in the groups. Psychological factors include energy, sleeping patterns, self-esteem and anxiety. Physiological factors include type of exercise and hours of exercise per week. A correlational analysis was used to test the relationship between the groups' exercise levels and their self-esteem, anxiety, sleep and energy.

Furthermore, quantitative research was seen to be more suitable for this research. A large sample size was used in order to try to accurately measure the relationship between exercise and self-esteem, anxiety, sleep and energy levels among adults. Regular exercise was assessed as occurring 3 or more days out of 7, consisting of one hour or more hours of exercise a day.

### ***Materials***

The participants were given a booklet containing four questionnaires to complete. Firstly, they were asked their age, their gender and whether they participated in exercise on a regular basis, the amount of exercise that they do and the general type of exercise.

1. The first questionnaire was measured by Leary's (1983) 'The Fear of Negative Evaluation Scale' which contained 12 statements on thoughts of anxiousness about

how other people perceived them and the feeling that people would think negatively of them. This aimed to measure the participant's anxiety levels by selecting from a 5 option answer scale on how much each statement suited their thoughts. For instance 'I worry about what other people think of me even when I know it doesn't make a difference', the options ranged from 1, not at all characteristic to 2, slightly a characteristic of me, 3 moderately a characteristic of me, 4 very characteristic of me, 5, extremely characteristic of me. Scores ranged from 12 to 60 with higher scores indicating higher anxiety.

2. In the second questionnaire, questions were asked on participant's levels of self-esteem which was assessed by 'The Self-Esteem Scale' (Rosenberg, 1965). This was a questionnaire containing 10 statements which participants had to read and choose the best answer to suit them. For example statements such as 'I feel that I am a person of worth, at least on an equal basis with others'. The answer scale contained 4 options with 1=strongly agree and 4=strongly disagree. Scores range from 10 to 40 with higher scores indicating higher self-esteem.
3. The third questionnaires were devised by the researcher which measured sleeping patterns and energy levels. This section was to research if people that exercised regularly had a higher energy drive and better sleeping patterns than people that did not participate in regular exercise. Questions such as 'I feel like I have more energy after continuous daily exercise' and 'I wake up numerous times during the night' were stated to which participants answered on a 4-point response format similar to the sleep pattern survey. Additionally, in this section participants were asked if they needed extra energy supplements to get them through the day for example 'I need a coffee to

get me going'. Scores range from 10 to 32 with higher scores indicated higher energy levels and better sleep.

4. The final questionnaire which was devised by the researcher which was only required to be completed by people that did regular exercise. It contained mixed themes on sleeping patterns and energy levels. The people that did not exercise were asked to leave this section blank. Participants were given an option of 4-point response format 1=strongly agree and 4=strongly disagree to statements such that 'I feel tired immediately after I exercise'. These statements were only devised so only a person that exercised could apply themselves too. Scores range from 10 to 40.

### ***Participants***

The age group of participants ranged from 18 to 63 years old. The mean age of all participants was 22 (with a standard deviation of 5), and they all had varying levels of physical activity. In total, two hundred participants were given questionnaires to complete. Participants were chosen from a Dublin college in both full and part time evening classes and questionnaires were also given out on Facebook using [www.surveymonkey.com](http://www.surveymonkey.com). Permission was sought from lecturers by emailing them a few days before entering their classroom in order to collect data for the experiment.

### ***Procedure***

Participants from the chosen Dublin college classes were greeted and given a very brief explanation on the thesis topic and why the questionnaires were necessary. They were then asked to complete the questionnaire in their own time and were given as much time as they needed to complete it. They were also made aware that any questions during or after the

procedure were very welcome. Each questionnaire took approximately fifteen minutes. After all the booklets were completed, participants were thanked for their contribution and time and given the opportunity to contact the researcher for further information on the thesis by including contact information (name and email address) at the end of the booklet.

Additionally, survey monkey was used to collect data as well. This survey was distributed by creating an event on Facebook and inviting people to complete the survey. A total of 120 surveys were completed in the classroom and 80 surveys were completed online. When the data was collected, scores on the anxiety questionnaire (Leary, 1983) and self-esteem questionnaire (Rosenberg, 1965), scales were reversed, so that higher scores would indicate higher anxiety and higher self-esteem. All negative answers were recoded, and then scores computed to give total scores. All statistics were computed with SPSS 22 for Windows and an analysis was carried out on the sample. SPSS stands for Statistical Package for the Social Sciences, it is software used to enable the user to read data from questionnaire surveys and other sources (Blank, 2014).

### ***Ethical considerations***

During the course of the research, many ethical issues have been taken into consideration. Before entering each classroom, permission was gained from the class lecturer by email. Each participant was given a brief description on what the research was about and why it was needed. They were also given the choice to not participate. Those that did participate were thanked and given time to ask any questions. Participants were also reassured that they would not be asked their names at any time throughout the questionnaire. Therefore their information remained anonymous and questionnaires would be identified by the researcher as numbers. The questionnaires were designed so as not to discriminate against anyone or

include any statements that could be considered offensive. Considering there were questions based on sensitive topics such as self-esteem and anxiety, two helplines contact numbers were stated at the end of the questionnaire in case anyone had felt effected. The researchers contact information was also available at the end of the questionnaire. Participants were thanked for their time and contribution verbally and lecturers involved were also thanked. Participants that completed questionnaires online were also given a brief description on the topic of the thesis and thanked online via the created Facebook event page.

## Results

As this research project was attempting to determine the relationships between the amounts of exercise people do and the effects on their self-esteem, sleeping patterns, anxiety and energy levels, data was collected from a sample size of 200 people. Correlation analysis was conducted to investigate these relationships. Correlation refers to the strength of a relationship between two variables. The correlation coefficient is a measure of linear association between two variables. Values of the correlation coefficient are between -1 and +1 (Crossman, 2015).

### *Descriptive statistics*

The primary aim of the present research is to focus mainly on positive benefits of regular exercise in peoples' lives. Two hundred participants volunteered to participate in this research on answering questionnaires based on the amount of exercise they do and their self-esteem, sleeping patterns, anxiety and energy levels. The following tables and figures display the findings from the questionnaires.

**Table 1. showing means and standard deviations for all the variables used in the analyses**

	N	Minimum	Maximum	Mean	Std. Deviation
self_esteem	200	10.00	40.00	30.6750	6.11443
Anxiety	198	18.00	60.00	35.5808	8.83125
Sleep	199	8.00	31.00	15.8945	3.75700
Energy	171	10.00	31.00	25.4094	3.60338

Table 1 shows the mean and standard deviation for each of these variables for all participants. It can be seen from the table above that the self-esteem and energy scores were high, coming out to a total of 30.68/40 and 25.41/31 respectively. A score of 30.68 comes out to an average

response of 3, which corresponds to a high of 2=agree, where negative statements were recorded. Contrastingly, anxiety and sleep scores were measured to be 35.6/60 and 15.9/30 respectively, which indicate more moderate responses.

**Table 2. showing total hours of exercise per week for all participants**

		Frequency	Percent	Valid Percent	Cumulative Percent
Hours	.00	22	11.0	11.0	11.0
of	1.00	2	1.0	1.0	12.0
exercise	2.00	11	5.5	5.5	17.5
per	3.00	44	22.0	22.0	39.5
week	4.00	25	12.5	12.5	52.0
	5.00	27	13.5	13.5	65.5
	6.00	22	11.0	11.0	76.5
	7.00	8	4.0	4.0	80.5
	8.00	13	6.5	6.5	87.0
	9.00	4	2.0	2.0	89.0
	10.00	12	6.0	6.0	95.0
	12.00	4	2.0	2.0	97.0
	13.00	1	.5	.5	97.5
	25.00	2	1.0	1.0	98.5
	26.00	1	.5	.5	99.0
	30.00	1	.5	.5	99.5
	72.00	1	.5	.5	100.0
Total		200	100.0	100.0	

Table 2 above shows the breakdown of all participants' documented hours of exercise per week. It can be seen from the table that 11% of participants do not exercise at all, 22% of participants exercise for three hours per week and about half of the participants (48%) exercised for five or more hours per week and only 23.5% of participants exercised seven or more hours weekly.

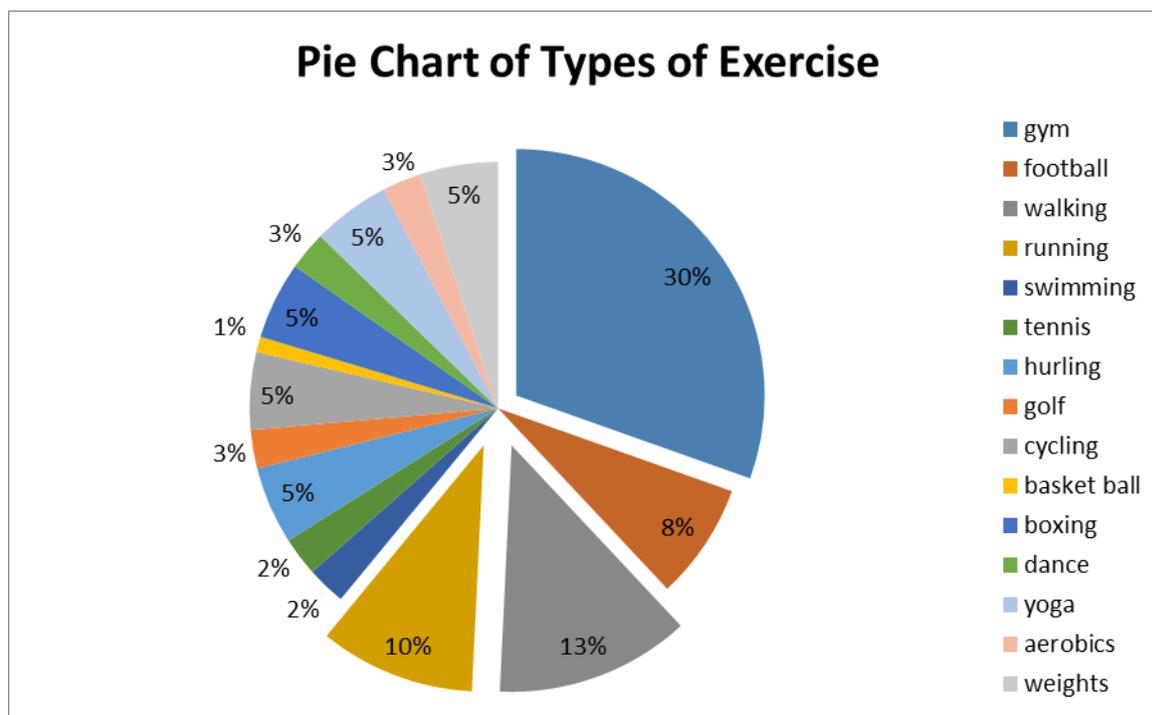


Figure 1. Chart displaying the different types of exercise performed

It can be seen from the pie chart above that going to the gym is the most popular type of exercise in this present research with a 30% of participants listing it on the questionnaire. Walking and running combined make up the next biggest category of primary exercise for participants, coming in at a frequency of 23%, and multiple other sports and activities making up the rest of the responses.

### *Inferential statistics*

**A series of correlation analyses were run to examine the relationship between exercise and self-esteem, anxiety, energy, and sleeping patterns to test for hypothesis.**

Hypothesis one predicted that there would be a positive relationship between self-esteem levels and exercise. However, the present research showed a negative relationship between self-esteem and exercise for the whole sample. Correlation analysis indicated that the correlation co-efficient between total self-esteem and exercise was  $r = -.090$  and  $p > .05$ . This

indicates a weak, negative and non-significant correlation; therefore no relationship was found between exercise and self-esteem for the participants in the present study. Therefore, the null hypothesis was retained.

The present research also predicted as hypothesis two that the more exercise people did the less anxiety they would have which is a negative relationship. However, correlation analysis indicated that the correlation co-efficient between anxiety and exercise was  $r = .095$  and  $p > .05$  for males and females. This indicates a weak, positive correlation between anxiety and exercise. Such that, there is no relationship between anxiety and exercise. In accordance, the null hypothesis was retained.

Hypothesis three predicted that there would be a positive relationship between energy levels and exercise for the whole sample. The correlation analysis indicated that the correlation co-efficient between energy and exercise was  $r = .039$ . This indicates a weak positive correlation and it is non-significant at the level  $p > .05$ . Furthermore, the null hypothesis was retained.

Finally, the fourth hypothesis predicted that there would be a positive relationship between sleep and exercise. The correlation analysis indicated that the correlation co-efficient between sleep and exercise was  $r = -.144$  and  $p < .05$ . This shows a negative and moderate to large result. Furthermore, the correlation was significant at  $p < .05$ . Therefore the null hypothesis was rejected.

## Discussion

### *Aim*

The aim of this present research was to examine the relationship between exercise and levels of anxiety, self-esteem, sleeping patterns and energy.

### *Conclusion of hypothesis and data*

It was hypothesised firstly, that there would be a positive relationship between self-esteem and exercise meaning that when high levels of physical activity and exercise are accomplished this should increase self-esteem levels. However, in this particular study the results were shown to be negative and non-significant. This result relates to a study on students which also showed there was no correlation between physical exercise and self-perception (McGuirk & Ethan, 2012). These results were assessed against the Psychological General Well-being Index (Dupuy 1984) and the Body Esteem Scale (Franzoi & Sheields, 1984). On the other hand, other research has been done that found better fitness leading to feelings of physical worth as exercise improves self-esteem perception (McAuley et al. 2000). Regardless of the correlation, participants in this study were observed to have high self-esteem overall already, independent of the amount of exercise performed as evidenced by the overall mean scores displayed on table one.

Additionally, Weinberg and Gould (2010) found that modern society has experienced an increase in people suffering with anxiety disorders and that exercise can help cope with this mental illness. This was not the case in this present study as hypothesis two predicted there would be a negative relationship between exercise and anxiety but instead there was a positive result observed. Additional studies such as Parker et al. (2011) have showed that

physical activity can be an effective form of treatment for people with anxiety and depression. Although Parker et al. (2011) study focuses on people with mental issues it still shows the positive effect exercise can have on a person's mental health.

Hypothesis number three predicted that there would be a positive relationship between energy and exercise for the whole sample. In this present study the results showed that there was a positive relationship between energy and exercise, however it was non-significant. Furthermore, feelings of restlessness and low energy are a result of bad health (Bower et al. 2000). A quarter of the population reports to have low daily energy levels (Lewis & Wesley, 1992). However previous studies have shown a significant difference for feelings of energy drive and better feeling of boost after exercise and during (Herring & O'Connor, 2009).

Finally, hypothesis number four predicted that there would be a positive relationship between sleep and exercise, in other words the more exercise a person did the better sleep pattern they would have. This present study showed a significant result however it was small and negative. Although the correlation was negative, it could be said that the more exercise a person does the less sleep they endure (Baekeland & Laskey, 1966).

***Further discussion on results:***

Further reasons as to why some of the hypotheses were not supported in this present research could be due to the fact that there were many more female participants than males in this study. In relation to this research, it has been found that women are a lot more self-conscious than men (Silberstein et al. 1988) which may have impacted the final results in this present research by lowering their self-esteem scores overall.

Another factor that could have impacted the present results and their relation to the hypotheses could arise from the fact that some participants worked in a gym as well as worked out, as evidenced by the participant who stated that they do seventy-two hours of exercise a week. Over exercising can cause exhaustion, where the body expends too much energy which in turn limits the energy benefits for some people (NHS, 2015). A study carried out in Denmark funded by the Danish Heart Foundation claims that strenuous jogging can be worse than not doing any exercise at all. The results showed that the best form of exercise is light jogging (NHS, 2015). In conclusion, there were many variations of hours of exercise participants did a week, and people that do more exercise than is recommended for optimum health benefits, or that their body can handle, could have led to the lower than expected energy levels observed for some participants.

***Limitations of this research:***

*Sample size:* The sample size for this research was two hundred participants between the ages of eighteen and sixty-three. As shown in Table 2: hours of exercise per week for all participants, 165 of these participated in exercise and 35 participants engaged in little or no exercise (2 hours or less of exercise per week). This sample size was quite small and limited in the fact that there were many more people that exercised than people that did not, therefore it could not be compared to other research. For example, if the sample size was 100 people that exercised and 100 people that did not exercise then the results may have been different in the sense that relationships may have been found between exercising and self-esteem, anxiety and energy levels. However, the results obtained from this sample were too unequal in numbers to get information to represent the population as a whole. This can be seen in a study by McGuirk and Ethan (2012), who sought to find the relationship between physical exercise and psychological well-being. However McGuirk and Ethan (2012), sample size used was

also very small at only sixty-five participants and the study ultimately resulted in no correlation being found between physical exercise and self-perception. In addition, this study used Psychological General Well-being Index (Dupuy 1984) and the Body Esteem Scale (Franzoi & Sheields, 1984) to evaluate the participants.

*Type of sample:* Results may have differed if sample of people taken was more specific. For example, the Department of Health and Children recently released a report called the 'State of the Nation's Children-Ireland 2006'. This report specifically focused on children and the amount of exercise they participated in. The results showed that 87% of children were physically active for two or more days per week. However, similarly to what was expected in hypothesis one of this present research, the results showed that the children that did not exercise regularly had low self-esteem (DOHC, 2006). Different age groups may feel more achieved in some ways than others, for example an elderly person may feel more achievement walking to the top of high steps whereas a child would feel more achievement running up them. Therefore, using the sample of people all in the same age group rather than a mix of different age groups may bring about more specific results, as done in a study conducted by Cameli et al (2008) on the effects of exercise on an older person's self-image.

*Monitoring the sample:* Throughout this research project there were no medical examinations or monitoring, such that there were no actual controlled measurements of sleep, anxiety, exercise or energy levels. Data was collected purely on participants' own judgment and opinion. For example, no instruments were used to measure heart rate, calories burned, or Rapid Eye Movement (REM), which could be used to objectively measure the intensity of exercise or quality of sleep achieved. This is important as what constitutes a hard workout or what a good night's sleep is may have a different meaning to each individual. Researchers

Baekeland and Lasky (1966) did an experiment monitoring participants' sleep after exercise. This study focused on the time of day that participants exercised, and at night they monitored their REM for a period of 6 hours a night over the course of four days. Participants were also tested for any medicine or alcohol intake before taking part in the experiment. The results showed that participants that exercised in the afternoon experienced the best REM at night, which is stage 3 (Baekeland & Lasky 1966). Moreover, if these factors were closely monitored in the present study, there would have been more data that could have impacted the results, thus leading to different conclusions.

Further questions could have been asked in this research to obtain an even deeper understanding of the participants' lives, such as measuring Body Mass index, weight or height. Similar to a study conducted by a Dublin college student (Mc Auley, 2012) where the researcher tested the participants for BMI, anxiety and self-esteem for those who do little or no exercise and those who exercise regularly. The sample was gathered from local gyms and various work places, the results showed that people that from the participants that did not exercise regularly only 21% of those were happy with their body. This study collected BMI levels which could then be compared to the recommended BMI level (Mc Auley, 2012).

The number of participants is varied in table one due to missing data points as some participants chose not to answer some questions due to personal choice. This limited the amount of data that the study was able to collect from which to draw conclusions in addition to the fact that people that did not exercise were asked to leave the last questionnaire blank as these questions did not apply to them.

There are also additional factors about other lifestyle choices which make a person feel low self-esteem and high anxiety, such as alcohol, drugs and a balanced diet. These factors, which were not tested for, could have affected the results of our sample population. According to Thurmon (2009), a healthy balanced diet can have a cognitive effect on a person's well-being. People need to be educated on exercise along with information on how to maintain a healthy and balanced diet in order to get the full benefit from their efforts (American College of Sports Medicine, 2004).

There are two more things that should be taken into account, sometimes people do not respond to surveys too seriously. Other people may have been having a bad day and as a result felt more anxious or depressed from their external circumstances, which could have transferred over to their responses. By repeating this questionnaire in a manner similar to the above modification, some of the less serious responses could be eliminated if the participant does not follow up for a second questionnaire. Additionally, a person who was having a bad day and scored lower on self-esteem or higher on the anxiety scale could have their results averaged out over a span of two or three sessions, thus reducing the impact that extenuating circumstances could have.

***Implications of this research:***

This present research aimed to examine the relationship between exercise and self-esteem, sleeping patterns, and anxiety and energy levels. The results did not support three out of the four predicted hypothesis (#s 1, 2, and 4) in this present research. However it has been tested in many studies that exercise is beneficial for an individual's self-esteem, such studies as (Ekeland, Heian, Hagen, 2005) who did an analysis of over 7,000 studies on self-esteem and exercise which showed that the more people that exercised the higher self-esteem they had.

The aim of this research was to see if exercise interventions can improve self-esteem among people of the general population. There was one particular study that was focused on children whose conclusion results showed that as children participated in more exercise and involvement with other children, they gained a higher more positive self-perception (Ekeland, Heian, Hagen, 2005). This demonstrates that results vary depending on the type of person selected for, and that different demographics influence can influence results. Thus, the type of group being tested for must be carefully considered in order to be able to draw stronger conclusions from the data. Thus, it can be implied from the research that the type of groups of people being selected to participate in studies such as these must be carefully considered in order to reduce effects from extraneous variables and be able to draw stronger conclusions from the data collected.

Additionally, the results of this project seemed to show a positive relationship between exercise levels and anxiety, contrary to the hypothesis. There are many possible reasons for this, but perhaps it is because as some people begin to work out more and see results, they become more conscious about their body image, and as a result more conscious about how they are perceived by others in other facets of their lives. By recording exercise and anxiety levels for participants over an extended period of time, data could be accumulated showing not just anxiety levels, but how an individual's anxiety levels changed over time and whether a different amount of exercise per week had an effect on this. Similar to a study approved by the Melbourne Health Human Research and Ethics Committee where participants were monitored specifically at three stages for 6 weeks and assessed by using Beck Depression Inventory (Beck at al.1961) and anxiety intervention. This modification could be extended to the other factors that were tested for: self-esteem, energy levels, and sleeping patterns, which

would allow for a more comprehensive analysis of the ways that exercise affected the participants.

### ***Directions for Further research***

Future research on the topic of exercise and health may suggest testing different areas of population to gain a wider variety of participants in order to include different responses. Further research could also involve a larger sample size, as the sample size in this study was restricted to two hundred participants or concentrate on one particular age group such as elderly or children. Additionally the research could focus on comparing two groups such as those that do little to no exercise and those that exercise regularly but bearing in mind to state the amount of exercise the researcher considers as little. Another area of focus could be on exercise and gender research, as according to the CSO 2014, women take part in exercise more than men because of more free time; this is a theme that could be researched further when discussing gender (CSO, 2014).

According to the present research, people that exercised more than 3 hours per week did not experience a change in their anxiety levels in this present study. Therefore, further research could look closer at the amount of daily recommended hours of exercise and the effects it may have. For example, recent studies by Parker et al. (2011) have shown regular exercise can be as effective as Cognitive Behavioural Therapy. Regular exercise is here defined as four or more hours a week for 4 or more days a week. This study has been approved by the Melbourne Health Human Research and Ethics Committee (Parker et al. 2011).

In this present research, going to the gym was the most popular type of exercise. Furthermore, the most beneficial type of research could be looked at in further research. Blair

(2008) cites a study in which researchers studied people who sat at home watching television for extended periods of time to walk around their sofa at home during the television advertisements. The results showed that they burned 65 calories more per hour, which concluded to be 260 calories in 4 hours; this could be a future topic of interest for social scientists (Blair, 2008).

## **Overall General Conclusion**

In conclusion, the results obtained from this present research did not fully support all of the hypotheses. Higher rates of exercise were found to have a negative relationship with self-esteem levels and quality of sleep and a positive relationship with anxiety and energy levels, whereas it was expected that more exercise would increase self-esteem, improve the quality of sleep, and decrease anxiety levels. However, it was also found that participants already had high self-esteem levels. The results differed from some of the previous research and could have been caused by a number of factors, notably a disparity in the amount of people who exercise regularly versus those that do not, a lack of a scale measuring exercises with different intensities, and chance fluctuations due to a person's particular mood on the specific day that they were questioned. However, one unique factor about this present study is that there was no specific study found to have the same hypothesis. Although, the present research did differ in comparison to previous findings, it demonstrates that more research needs to be completed in order to obtain a better understanding of exactly how exercise benefits or affects people's bodies.

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## Appendix

### How exercise affects me

This study is concerned about how exercise affects people's daily lives. Please answer questions as honest as you can, there is no right or wrong answers. Answers will be kept anonymous and there is no need to write your name on the sheet. I hope you find this interesting, and I would like to thank you in advance for your time and co-operation. If you require any further information concerning this research, please contact me at the email address below.

Sarah Staples                      Email: 1656022@mydbs.ie

#### Please complete the following demographic information:

What is your age? \_\_\_\_\_

What is your gender? \_\_\_\_\_

How many hours of exercise do you do a week? \_\_\_\_\_

What kind of exercise do you participate in? \_\_\_\_\_

**INSTRUCTIONS: Please read the following statements and indicate how much you agree with them by circling the appropriate number to the right of the statement as follows:**

1 = strongly agree

2 = agree

3 = disagree

4 = strongly disagree

- |   |  |   |   |   |   |
|---|--|---|---|---|---|
| 1 | I feel that I am a person of worth, at least on an equal basis with others | 1 | 2 | 3 | 4 |
| 2 | I feel that I have a number of good qualities                              | 1 | 2 | 3 | 4 |
| 3 | All in all, I am inclined to feel that I am a failure                      | 1 | 2 | 3 | 4 |
| 4 | I am able to do things as well as most other people                        | 1 | 2 | 3 | 4 |
| 5 | I feel that I do not have much to be proud of                              | 1 | 2 | 3 | 4 |
| 6 | I take a positive attitude towards myself                                  | 1 | 2 | 3 | 4 |
| 7 | On the whole, I am satisfied with myself                                   | 1 | 2 | 3 | 4 |
| 8 | I wish I could have more respect for myself                                | 1 | 2 | 3 | 4 |

- 9 I certainly feel useless at times 1 2 3 4
- 10 At times I think I am no good at all 1 2 3 4

**INSTRUCTIONS: Please read the following statements and indicate how much you agree with them by circling the appropriate number to the right of the statement as follows:**

- 1 = strongly agree  
 2 = agree  
 3 = disagree  
 4 = strongly disagree

- 1 .I find it difficult to find energy to exercise.....1 2 3 4
2. I drink a lot of energy drinks.....1 2 3 4
3. I need a coffee to get me going.....1 2 3 4
4. I eat a nutritious diet.....1 2 3 4
5. I feel that I have a good sleep pattern.....1 2 3 4
6. I find it hard to go to sleep at night.....1 2 3 4
7. I wake up numerous times during the night.....1 2 3 4
8. I don't feel like exercising after having a bad night's sleep.....1 2 3 4
9. On the whole, I am satisfied with my sleeping pattern .....1 2 3 4
10. I usually wake up naturally .....1 2 3 4

**INSTRUCTIONS:** Read each of the following statements carefully and indicate how characteristic it is of you according to the following scale:

If this is ' <i>not at all characteristic of me</i> ', circle	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this is ' <i>slightly characteristic of me</i> ', circle	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this is ' <i>moderately characteristic of me</i> ', circle	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
If this is ' <i>very characteristic of me</i> ', circle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
If this is ' <i>extremely characteristic of me</i> ', circle	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
1. I worry about what other people think of me even when I know it doesn't make a difference	<input type="radio"/>				
2. I am unconcerned even if I know people are forming an unfavourable impression of me	<input type="radio"/>				
3. I am frequently afraid of other people noting my shortcomings	<input type="radio"/>				
4. I rarely worry about what kind of impression I am making on someone	<input type="radio"/>				
5. I am afraid that others will not approve of me	<input type="radio"/>				
6. I am afraid that people will find fault with me	<input type="radio"/>				
7. Other people's opinions of me do not bother me	<input type="radio"/>				
8. When I am talking to someone, I worry about what they may be thinking of me	<input type="radio"/>				
9. I am usually worried about what kind of impression I make	<input type="radio"/>				
10. If I know someone is judging me, it has little effect on me	<input type="radio"/>				
11. Sometimes I think I am too concerned with what other people think of me	<input type="radio"/>				
12. I often worry that I will say or do the wrong things	<input type="radio"/>				

**Note: If you exercise regularly then please complete the following section, if not then thank you for participating in the survey.**

**INSTRUCTIONS: Please read the following statements and indicate how much you agree with them by circling the appropriate number to the right of the statement as follows:**

- 1 = strongly agree
- 2 = agree
- 3 = disagree
- 4 = strongly disagree

- 1. I feel tired immediately after I exercise.....1 2 3 4
- 2. I feel like I have no energy during exercise.....1 2 3 4
- 3. I feel like I have more energy after continuous daily exercise.....1 2 3 4
- 4. I am full of energy after I have pushed myself that little harder.....1 2 3 4
- 5. I find it easier to exercise outdoors.....1 2 3 4
- 6. I feel that I have better sleep after exercising daily for more than a week.....1 2 3 4
- 7. I find it easier to go to sleep at night on a day that I have exercised.....1 2 3 4
- 8. I feel restless throughout the day if I exercise in the morning .....1 2 3 4

If you would like to know any information about the project please feel free to contact my email address which you will find on the cover sheet. If you feel you have been effected by any of these questions and feel you need to talk to someone Samaritans are happy to help on

(01) 116123 or Reach out at (01) 764 5666.

Thank you for your time

Sarah Staples

## Survey monkey questionnaire:

1. what kind of exercise do you participate in?

what kind of exercise do you participate in?

2. what is your gender?

what is your gender?

3. how many hours of exercise do you do a week?

how many hours of exercise do you do a week?

4. what is your age?

what is your age?

\*

5. **INSTRUCTIONS:** Please read the following statements and indicate how much you agree with them by circling the appropriate number to the right of the statement as follows:

1=strongly agree 2=agree 3=disagree 4=strongly disagree

	1	2
1. I feel that I am a person of worth, at least on an equal basis with others.	<input type="radio"/>	<input type="radio"/>
2. I feel that I have a number of good qualities.	<input type="radio"/>	<input type="radio"/>
3. All in all, I am inclined to feel that I am a failure.	<input type="radio"/>	<input type="radio"/>
4. I am able to do things as well as most other people.	<input type="radio"/>	<input type="radio"/>
5. I feel that I do not have much to be proud of.	<input type="radio"/>	<input type="radio"/>
6. I take a positive attitude towards myself.	<input type="radio"/>	<input type="radio"/>
7. On the whole, I am satisfied with myself.	<input type="radio"/>	<input type="radio"/>
8. I wish I could have more respect for myself.	<input type="radio"/>	<input type="radio"/>
9. I certainly feel useless at times.	<input type="radio"/>	<input type="radio"/>

10. At times I think I am no good at all.

1      2

Next

\*

6. **INSTRUCTIONS:** Please read the following statements and indicate how much you agree with them by circling the appropriate number to the right of the statement as follows:

1=strongly agree 2=agree 3=disagree 4=strongly disagree

	1	2	3	4
1. I find it difficult to find energy to exercise.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I drink a lot of energy drinks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. I need a coffee to get me going.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I eat a nutritious diet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I feel that I have a good sleep pattern.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. I find it hard to go to sleep at night.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I wake up numerous times during the night.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. I don't feel like exercising after having a bad night's sleep.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. On the whole, I am satisfied with my sleeping pattern	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. I usually wake up naturally.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\*

7. **INSTRUCTIONS:** Read each of the following statements carefully and indicate how characteristic it is of you according to the following scale:

- If this is '*not at all characteristic of me*' ,      check 1 2 3 4 5
- If this is '*slightly characteristic of me*' ,      check 1 2 3 4 5
- If this is '*moderately characteristic of me*' ,      check 1 2 3 4 5
- If this is '*very characteristic of me*' ,      check 1 2 3 4 5
- If this is '*extremely characteristic of me*' ,      check 1 2 3 4 5

	1	2	3	4	5
1. I worry about what other people think of me even when I know it doesn't make a difference.	<input type="radio"/>				

	1	2	3	4	5
2. I am unconcerned even if I know people are forming an unfavourable impression of me.	<input type="radio"/>				
3. I am frequently afraid of other people noting my shortcomings.	<input type="radio"/>				
4. I rarely worry about what kind of impression I am making on someone.	<input type="radio"/>				
5. I am afraid that others will not approve of me.	<input type="radio"/>				
6. I am afraid that people will find fault with me.	<input type="radio"/>				
7. Other peoples' opinions of me do not bother me.	<input type="radio"/>				
8. When I am talking to someone, I worry about what they may be thinking of me.	<input type="radio"/>				
9. I am usually worried about what kind of impression I will make.	<input type="radio"/>				
10. If I know someone is judging me, it has little effect on me.	<input type="radio"/>				
11. Sometimes I think I am too concerned with what other people think of me.	<input type="radio"/>				
12. I often worry that I will say or do the wrong things.	<input type="radio"/>				

**Note: If you exercise regularly, then please complete the following section. If not, then thank you for participating in the survey.**

**INSTRUCTIONS:** Please read the following statements and indicate how much you agree with them by circling the appropriate number to the right of the statement as follows:

- 1=strongly agree  
 2=agree  
 3=disagree  
 4=strongly disagree

	1	2	3	4	N/A
	<input type="radio"/>				
1. I feel tired immediately after I exercise.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. I feel like I have no energy during exercise.	<input type="radio"/>				
3. I feel like I have more energy after continuous daily exercise.	<input type="radio"/>				
4. I am full of energy after I have pushed myself a little harder.	<input type="radio"/>				

	1	2	3	4	N/A
5. I find it easier to exercise outdoors.	<input type="radio"/>				
6. I feel that I have better sleep after exercising daily for more than a week.	<input type="radio"/>				
7. I find it easier to go to sleep at night on a day that I have exercised.	<input type="radio"/>				
8. I feel restless throughout the day if I exercise in the morning.	<input type="radio"/>				

9.

If you would like to know any information about the project please feel free to contact my email address, which you will find on the cover sheet. If you feel that you have been effected by any of these questions and feel you need to talk to someone, Samaritans are happy to help on (01) 116123 or Reach out at (01) 764 5666

Thank you for your time!

Sarah Staples