Patterns of Eating Habits in Individuals Relating to Levels of Exercise

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Abstract

There are three main research questions being addressed by this research. The first one is "do individuals who regularly exercise have more disordered eating habits compared to individuals who do not exercise regularly". The second question is, "is there a correlation between levels of exercise and disordered eating habits". The third and final question is, "is there a difference among genders". The Minnesota Eating Behavior Survey (MEBS) was administered to participants (n=83) through a link provided on Instagram. Results showed that individuals who regularly exercise have a larger number of disordered eating habits compared to individuals who do not regularly exercise; as the number of days exercise was conducted went up, so did the levels of disordered eating habits. A slight variation between genders was found, however this does need to be perceived with caution as 65% of the participants were female. This study is beginning to fill the gap in the current literature, which would provide a greater knowledge from a psychological perspective on eating habits and how they are affected by levels of exercise which would be useful for treatment. Further research in this area would provide necessary knowledge needed to expand on education for health reasons.

Table of Contents

Literature Review

Every individual is different in many aspects. The only two people that will ever be exactly the same genetically are identical twins, but not necessarily in personality (Bouchard & Tremblay, 1997). Therefore, no two individuals will ever be the same. Every human has different eating habits, exercise preferences and body perceptions. Eating habits can be described as types of food that are most appealing, how often food is eaten, when in the day it is eaten and how it makes a person feel (Schwartz, Scholtens, Lalanne, Weenen, & Nicklaus, 2011). Eating Habits may be influenced by culture, upbringing, and religion (Axelson, 1986). Exercise is also a personal preference. What type of exercise is conducted along with what regularity it is performed in (Skrinar, Williams, Bullen, McArthur, & Mihok, 1992). Many questions are posed about eating habits, with one of them being related to exercise. Does exercise impact eating habits in a positive or negative way (Panão and Carraça, 2019). This matters for the simple fact of knowledge of the human body. As a society, it is assumed that the more you exercise the healthier you are. However, there is a correlation between exercise and eating habits (Cobb-Clark, Kassenboehmer, & Schurer, 2014), and not necessarily a positive one, which will be discussed in relation to relevant research conducted. There is also a gender difference in the topic of food, eating habits and exercise. Females tend to exercise more than men and suffer from greater eating habit related disorders such as anorexia nervosa (Hsu, 1989). This is explained as female diet and exercise more to obtain a certain body shape (Tiggemann & Williamson, 2000). What circumstances created this skewness towards females in food related behaviors and exercise, and why doesn't such a high figure of males also deal with these issues as females do. Do the issues go unreported in males or is it a societal issue that causes females to be more self-aware in this area of natural existence. The aim of this review is to analyze current research on

eating habits, regular exercise, non-regular exercise, male specific issues relating to the topics and female specific issues relation to the topics.

Regular Exercise

There is a societal stereotype that the more an individual exercises the healthier that individual is (Chalabaev, Sarrazin, Fontayne, Boiché, & Clément-Guillotin, 2013). Exercise is proven to reduce stress (Paolucci, Loukov, Bowdish, & Heisz, 2018) and improve resilience of the overall body including but not specific to cardiovascular health (Ito, 2019). Exercise is known to increase quality of life (Berger & Tobar, 1993) but it is not directly linked to a longer life expectancy; however, it is linked to reducing risks of cardiac diseases (Fiuza-Luces et al., 2018) and improvement in immunity of infection (Nieman, 1994).

Exercise can come in many different forms. Some physical activities may be as simple as walking while others can be more physically demanding like bodybuilding, football, or athletics. In a study conducted by Garner, Rosen, and Barry (1998), research concluded to the notion that individuals who take part in physical exercise where leanness is preferable, for example athletics, have a higher tendency to have unhealthy eating habits and even higher tendency to develop eating disorders compared to other individuals, which sport does not prefer a leaner physique. This study in particular was and still is one of the founding bodies of the topic that sport provides higher breathing ground for disordered eating habits when not managed correctly. This study was later reproduced by Bratland-Sanda and Sundgot-Borgen (2013). It stated that 45% of females who exercise regularly have prevalence to eating disorders. With comparison of the two studies, 15 years apart, they have shown similar findings in females, and both specify that a greater need to research on males is needed. A recent study by Schotzko (2021), confirmed the early findings

of Garner, Rosen, and Barry (1998) to be true. Physical activity such as athletics unfortunately seem to promote the highest level of disordered eating among exercise doers.

There is a great difference in this section of the literature that focuses on physical activity that promote leanness compared to physical activities that embrace the larger frame. For instance, in the activity of bodybuilding, it is strongly underlined that individuals who partake in this activity are extremely focused on the food that they consume (Garner, Rosen, & Barry, 1998). Even though this food may be healthy and high in protein and carbs, there is still a certain level of obsessive behavior that is associated with the constant need to consume enough calories and nutrients (Goldfield, Blouin, & Woodside, 2006). This is also considered to be a disordered eating habit, despite the food eaten is of a healthy variety (Baum, 2006). Research finding by Garner, Rosen, and Barry (1998) examined the possibility of bodybuilders having an eating disorder. The findings revealed that females have often gone into the sport with already preexisting conditions like bulimia nervosa and males tend to show extremely controlling behavior in relation to what they intake as food or other substances (Goldfield, 2009). These findings highlight that extremism on both sides of the preferred physique may contribute to unhealthy eating habits. These habits unfortunately may turn into much more serious conditions if left untreated (Probert & Leberman, 2009). However, it can not be said that every individual that is at one end of the physique spectrum because of the physical exercise they do, will develop severe problems because of their bad eating habits (Holland, Brown, & Keel, 2014). Some individuals will be able to live a perfectly healthy and happy life with the bad eating habits that they may uphold (Ruiz-Ariza, de la Torre-Cruz, Redecillas-Peiró, & Martínez-López, 2015).

Non-Regular Exercise

There may be many reasons why individuals do not exercise. Some may be health related reasons, like a disability, chronic pain, or prolonged illness; while some individuals may not enjoy it and simply do not want to comply with modern sociological ideas of norms and the trend that has become 'exercise' or 'working out'. When bad eating habits are not brought on by extreme physical activity, they are collectively thought of as being brought on by social media and content sharing (Feuston, Taylor, & Piper, 2020). There is minimal to no research done on comparing eating habits among individuals who regularly exercise and individuals who do not regularly exercise. However, there is a study which proves that elite athletes have a higher level of risk in experiencing unhealthy eating habits and eating disorders. This study was conducted by Sundgot-Borgen and Torstveit (2004).

However, a study conducted by Davis and Woodside (2002), concluded that exercise can help with the recovery in eating disorders in individuals who have not previously exercised. A huge gap in the literature can be spotted here as most studies examine eating disorders and not eating habits. This limits the knowledge that can be obtained on the topic of eating habits of individuals who do not exercise regularly. A similar study conducted by Danielsen, Rø, and Bjørnelv (2018), highlighted that exercise is a "beneficial supplement to the treatment of ED (eating disorders)". From this it can be assumed that the treatment and cause of bad eating habits, or in extreme cases eating disorder, which is what most of the literature focuses on, are extremely situational and individual to each person (Polivy & Herman, 2002; Wilson, Grilo, & Vitousek, 2007). Kolar and Gorrell (2020) proposed that low levels of exercise may promote rehabilitation, while higher levels of exercise can promote addiction to exercise itself, which would lead to the eating disorder cycle like a merry-go-round.

As not enough studies are conducted on the topic of eating habits of individuals that do not exercise, with most focusing on exercise as a remedy for eating disorders in individuals who have not exercised before the eating disorder; there cannot be a comparison done of this literature compared to literature on eating habits of individuals who do regularly exercise. More studies need to be conducted in this area to understand if there is a correlation between levels of exercise and eating habits. Along with other factors that may influence these such as religion, family circumstances and culture, society, and location.

Gender Differences

In food behavior research, females are outstandingly more prone to bad eating habits, eating disorders and problems with body image (Sarwer et al., 2005). The topic of body image has been engraved to western civilization for decades, generally admiring the physical attractiveness of a female physiques when presented in a thinner and firm shape (Thompson & Strice, 2001). In the 1960's and 1970's, average woman took inspiration about body proportions from models in magazines, in the 1990's and 2000's from tv celebrities and actresses, and in the current age, woman fall into the trap of comparison with social media influencers (Harrison, 2003). There have been many studies published which come to the same conclusion that social media can have a negative effect on the perceived image of oneself from a female perspective, which may lead to extreme negative views also with distorted body image (López-Guimerà, Levine, Sánchez-carracedo, & Fauquet, 2010). Social media is now highlighted as a common contributor to distorted eating habits and eating disorders among females (Marks, de Foe, & Collett, 2020). The question still lies, why is this a more common phenomenon in females versus males. In a study published Sharan & Sundar (2015), it is commented on that female's may be at higher risk of food related issues and illnesses due to factors such as low self-esteem, anxiety,

depression, obsessive-compulsive disorder, troubled relationships and using food as a coping mechanism.

In relation to males, the gender is extremely underrepresented in most aspects of this research. There is quite a sufficient amount of research on professional male athletes and their eating habits, however, no research is completed on average males. There is also a lack in studies on male eating disorder and male perception of body image. There are innumerable studies dedicated to females on the last two topics. Strother, Lemberg, Stanford, and Turberville (2012), examined eating disorders in men, highlighting their finding that many males go untreated and undiagnosed. A study conducted by Baum (2006), also states that male eating disorders are easier to be missed since the disease is more commonly associated with females. That being a problem in itself, that plenty of males go undiagnosed and many are misunderstood according to Baum, there are virtually no studies about male eating habits without the focus of either sport, obesity, or cardiovascular problems. This gap in the literature makes it seemingly impossible to provide an even analyses and comparison of males and females on the topic of eating habits relating to exercise levels.

Overview

As an overview, eating habits are an under examined field of psychology, which can be observed why the gaps in literature. The literature mostly focuses on eating disorders or eating habits of professional sporting individuals. There is a good base of research on the topic of eating habits in athletes, with studies beginning to examine eating habits and their evolution into eating disorders and how they can be triggered by many aspects of live, each individual to each person (Turner & Thompson, 2013). There is a need for further examination of individuals who are not athletes, but simply exercise for health or physical appearance. The male population is extremely

underrepresented with the average male, who is not considered a professional athlete, providing extremely skewed data and knowledge on the subject. However, due to this extensive focus on females in the genre of research, great findings have been explored, which suggest that woman are more easily influenced by unrealistic factors and images in magazines, film, and social media (Harrison, 2003). Even though there may be this huge gap in the literature in many forms in relation to the topic of eating habits, this is however a topic that has only become increasingly popular in the last 30 years or so (Bozsik, Whisenhunt, Hudson, Bennett, & Lundgren, 2018). It is a topic that will steadily increase in popularity as it will account for the effects of social media and also for the newly found acceptance of all bodies in the latest years (Baum, 2006).

The Current Study

The first research question is "do individuals who regularly exercise have more disordered eating habits compared to individuals who do not exercise regularly". This comes from one of the gaps in the literature where there is not any analysis on individuals who are not regular exercisers or individuals who exercise regularly but are not professional athletes in a sport. The second question is linked to the first one as it intends to measure the correlation between the number of days that a person exercises and their score on the Minnesota Eating Behavior Survey. This will allow for a greater understanding of the first question as it dives in deeper to what levels of exercise actually promote worst eating habits. The theory behind this question is that professional athletes are at a higher risk disordered eating habits or an eating disorder (Garner, Rosen, & Barry, 1998). Therefore, the second question is: "is there a correlation between levels of exercise and disordered eating habits".

The third question stems from the huge skewness in research towards the female sex. There are not enough comparative studies of the two genders, and effectively no literature about

eating habits in relation to levels of exercise comparing the two genders. Which is why the third research question focuses on “is there a difference among genders”. As shown through the review, most studies focus are very specific either to gender or to extreme exercise levels. In this research, that will be eliminated by the inclusivity of both genders with it not being specific to any exercise level or age, but it will exclude professional athletes as the research are on their eating habits is quite broad.

Methodology

Participants

The sought-out sample size was 128 due to the calculation of G-Power (Faul, Erdfelder, Buchner, & Lang, 2009). The total number of participants that completed the survey is 88. Out that the 88 participants, five of the data sets were removed due to the participants not currently living in the Republic of Ireland. That equaled to the data from 83 participants being analyzed. 29 of those participants are male and the remaining 54 participants are female. Only males and females were analyzed in this research. The demographic information gathered from participants during the course of the survey other than gender and residency in Ireland is age. Convenient sampling was used to obtain the participant in the form of an online survey. Convenient sampling can be described as a form of non-probability sampling. In this case, individuals clicked a link to the survey and their participation was completely voluntary.

Measures/Materials

The survey used to complete this study is the Minnesota Eating Behavior Survey (MEBS) (Appendix C). This is a self-reported, 30 item survey. It assesses the severity of global eating-related pathology and specific areas of difficulty which are assigned into four subscales. The subscales that can be calculated from this are Weight Preoccupation, Body Dissatisfaction, Binge Eating and Compensatory Behavior. In this survey, there are four answers to choose from. The answers are Definitely True, Probably True, Probably False, and Definitely False. To calculate the results accurately, questions 1, 8, 12 and 22 have to be reverse scored after the data is collected. To calculate subscale ‘Weight Preoccupation’, questions numbered 2, 10, 11, 14, 24, 25 and 29 must be added together, then divide to get the answer. To obtain the subscale of ‘Body

Dissatisfaction', add questions 3, 8, 12, 16, 18 and 22. Then the division process is repeated. For the subscale 'Binge Eating', questions 4, 6, 15, 19, 23, 27 and 28 then the process is repeated. Finally, subscale 'Compensatory Behavior' uses questions 5, 9, 13, 17, 26 and 30. Questions 1, 20 and 21 are not used to calculate any subscales. The subscales will not be used in these analyses; however, they are worth mentioning since they can be analyzed using MEBS. The data gathered from the subscales is reported as means and standard deviations. Question 21 will be rephrased to make it inclusive for males and females by using the sentence "I exercise to control my weight more than other individuals my age" instead of "I exercise to control my weight more than other woman my age". The reliability refers to stability of the measure. MEBS as a measure has generally been satisfactory with internal consistency and test–retest reliability (von Ranson et al., 2005). MEBS meets the criteria for validity as it consistently used over many studies to screen for and measuring eating disturbance withing longitudinal and cross-sectional studies involving participants of all ages (von Ranson et al., 2005). The reliability result, Cronbach's Alpha is reported at ($\alpha = .96$) for this sample. Generally, a figure above ($\alpha = .70$) or higher is reported as a good internal consistency (DeVillis, 2003; Kline, 2005).

Design & Analyses

The design of the study is a correlational research design. There are three research questions being analyzed within this study. The first one is "Do individuals who regularly exercise have more disordered eating habits compared to individuals who do not exercise regularly". The independent variables for this question are regular exercise and non-regular exercise. The dependent variable is disordered eating habits. The second question is, "Is there a correlation between levels of exercise and disordered eating habits". With the independent variable being levels of exercise on a 1-7 likert scale and the dependent variable is disordered

eating habits. The third and final question is, “Is there a difference among genders”. The independent variable is gender, and the dependent variable is disordered eating habits.

Procedure

The link to the survey will be on social media of the researcher, Katarzyna (Kasha) Skoczen. When a person decided to click the link to complete the survey, they will be presented with an information sheet (Appendix A) and consent form (Appendix B). This page will inform the now participants that, you must be over the age of 18 and currently identify as a male or female. It will also state that they cannot be a professional athlete if they wish to complete the study. The information sheet and consent form will also state that this study is de-identified, therefore once they submit their survey, the data cannot be retrieved, but they are free to withdraw at any time before that. It will provide a sample question and state that this survey may be triggering due to the sensitive topic of eating habits, eating disorders and body image. That will also be explained on the information sheet. It will highlight that it is their own choice whether they participate or not as it is not a mandatory survey. At the bottom of the page, they will be presented with a question asking if they consent to taking part in the study. Once a participant consents, they may begin the survey.

The survey will begin with a question about the participants age and take no more than 10 minutes to complete. It will then ask them how many times they exercise per week on an average basis. If the participant exercises 3 times per week or more, this will put them into the ‘regular exercise group’. If they state that they exercise less than 3 times per week, they will be put into the ‘non-regular exercise’ group. The Minnesota Eating Behavior Survey (MEBS) is being used (Appendix C). The participants must answer the questions why ticking the statement on the scale that applies to them most in the particular question. The survey is not divided into specific

subsection, however subscales of ‘Weight Preoccupation’, ‘Body Dissatisfaction’, ‘Binge Eating’ and ‘Compensatory Behavior’ subscales can be calculated. The whole survey is 30 questions. Due to the short time of the survey, there will be no breaks given to the participants.

After the survey is complete, participants will be met with a debriefing sheet (Appendix D). This will thank them for participating in the study. On the debriefing sheet, there will also be web links and telephone numbers to support websites and organizations for eating disorders, along with contact information for the researcher and the supervisor. Participants will be encouraged to contact these if they have been negatively affected by the questions in this study. Once participants click out of this page, they are finished with their participation in the study.

There are minor ethical concerns with this survey due to the sensitive nature of the study revolving around eating habits, exercise, and body image. It is a de-identified study, therefore there is no way to identify a participant which leads to no social risk. In the case of this study, it cannot be used for diagnostic purposes. These issues will be addressed before participants begin the survey, they are informed of the sensitive nature of the study and given a sample question on the information sheet and consent form. It will be strongly highlighted that this is an optional survey. It will detail that the study is de-identified, and they are free to withdraw at any time before that. With all the warnings in place, participants are well informed of the slight chance of mental distress that may occur due to this study. An average healthy participant should not feel distress from this survey. On the debriefing sheet which appears when the survey is complete, there will be web links and telephone numbers to support websites and organizations for eating disorders and body image. Participants will be encouraged to contact any one of these if they have been negatively affected by the questions in this survey.

Results

Descriptive Statistic

The data is taken from a sample of 83 participants (n = 83). This data contains 65.06% females (n = 54) and 34.94% males (n = 29). Every individual in this sample was living in Ireland at the time of the data collection. The continuous variables included are regular exercise male, non-regular exercise male, regular exercise female and non-regular exercise female. Table 1 presents the frequencies of the four variables. It shows what percentage of males and females there are exercising on each day of the 1-7 continuous scale. The largest number of individuals exercise 5 days per week (n = 18), with males and females being split evenly at 50%. These participants fall into the regular exercise category. The smallest number of participants exercise 2 and 7 days per week (n =7). Individuals who exercise 2 days per week are split 14.29% males and 85.71% females. This group is categorized as non-regular exercise. Individuals who exercise 7 days per week are split at 28.57% males and 71.43% females. The largest percentage of male's exercise 5 days per week at 50%. The largest percentage of females exercise 2 days per week at 85.71%. This unfortunately is not an even representation of genders, as 65.06% (n = 54) of the participants are female.

Table 1

Frequencies for the current sample of males and female on a continuous 7-day scale 7of exercise (N = 83)

Variable		*N*	Valid Percent
Exercise 1 Day Per Week	Male	6	42.86%
	Female	8	57.14%
Exercise 2 Days Per Week	Male	1	14.29%
	Female	6	85.71%
Exercise 3 Days Per Week	Male	4	36.36%
	Female	7	63.63%
Exercise 4 Days Per Week	Male	5	33.33%
	Female	10	66.66%
Exercise 5 Days Per Week	Male	9	50%
	Female	9	50%
Exercise 6 Days Per Week	Male	2	18.18%
	Female	9	81.82%
Exercise 7 Days Per Week	Male	2	28.57%
	Female	5	71.43%

The mean (M) with 95% confidence interval, std error mean, median, standard deviation (SD), range, minimum and maximum scores are displayed in Table 2 below, which was conducted for question 1, “do individuals who regularly exercise have more disordered eating habits compared to individuals who do not exercise regularly”. 75.86% of males tested classified as regular exercises (n = 22) and the remaining 24.14% of males classified as non-regular exercisers (n = 7). Out of the 54 females surveyed, 74.07% classified as regular exercise (n = 40) and the remaining 25.93% of females classified as non-regular exercisers (n = 14). Figure 1 is a bar chart which highlights the comparison of means for both genders in regular and non-regular exercise.

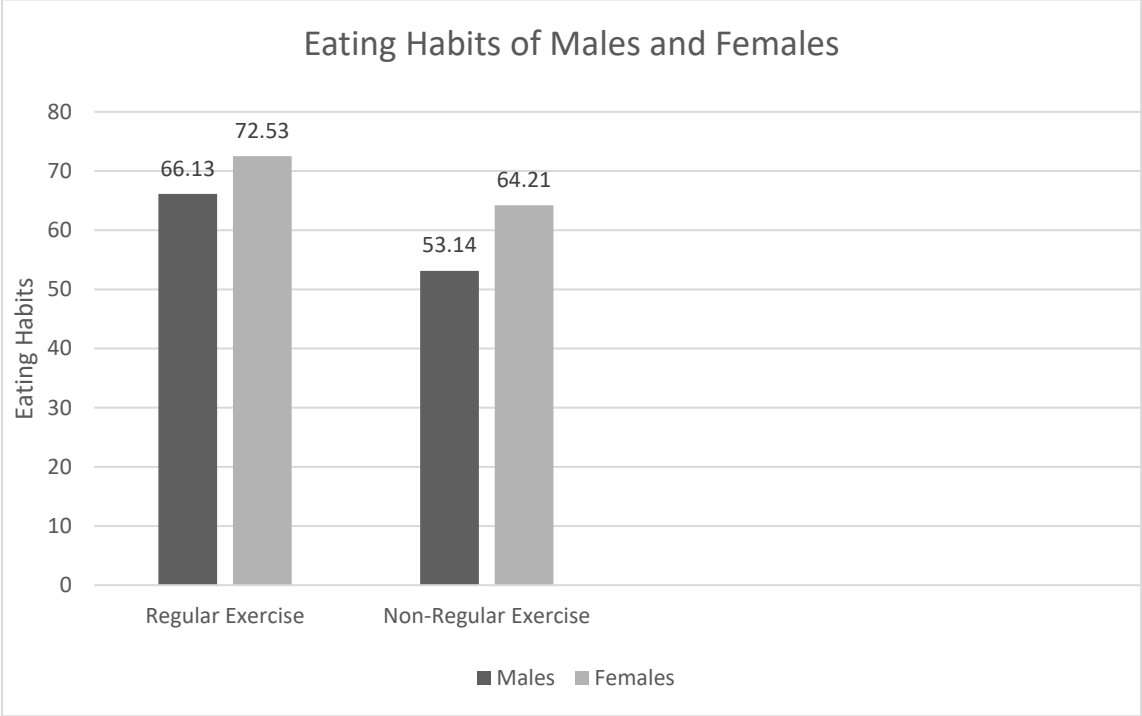
Table 2

Descriptive statistics of all continuous variable (N = 83)

Variable	*M* [95% CI]	*SD*	Range
Regular Males	66.13 (54.77-75.63)	25.64	80
Non-Regular Males	53.14 (30.66-75.63)	24.31	55
Regular Females	72.53 (66.56-78.5)	18.67	73
Non-Regular Females	64.21 (52.54-75.9)	20.23	66

Figure 1

Comparative means of both genders divided among regular exercise and non-regular exercise



Inferential Statistics

None of the four continuous variables show a significant result of ($p < .05$) in the Kolmogorov-Smirnov test of normality. There were also no outliers identified.

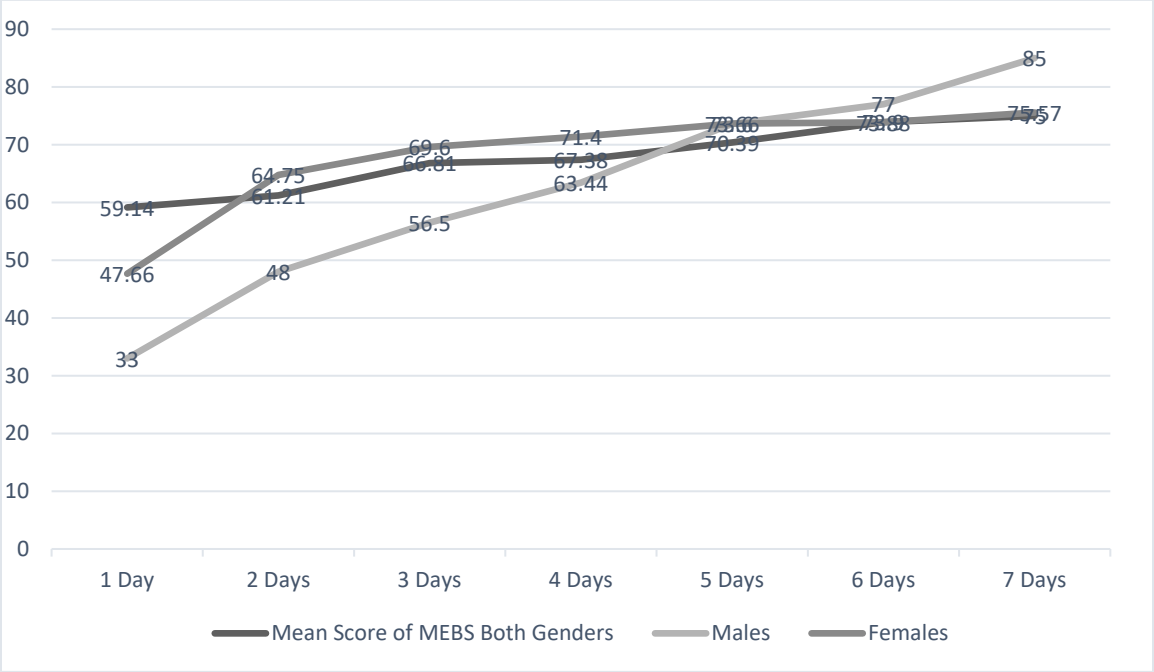
A correlation was ran for question 2, "is there a correlation between levels of exercise and disordered eating habits". The results show a low positive correlation between levels of exercise and disordered eating habits, however according to the p value, this is not statistically significant as it is just above .05, $r_s = .165$, $p < .058$. The correlation among levels of exercise and eating habits were investigated using Pearson product-moment correlation coefficient. Individuals who are classified as non-regular exercise, as a group have a mean score of 60.52.

The group of individuals who classify as regular exercise have a mean score of 69.40. This can also be corroborated by the mean score's individuals on each exercise day. The mean score for the group of participants who exercise 3 days per week is 66.81; the mean for the group of participants who exercise 5 days per week is 70.39 and finally the mean for the group of participants who exercise 7 days per week is 75. This shows an increase in disturbed eating habits as the amount of exercise increases which can be seen in Figure 2 below.

A two-way ANOVA was conducted for question 3, "is there a difference among genders", to understand the effects of levels of exercise on gender and eating habits. There was a not statistically significant interaction between gender and level of exercise score, $F(9, 20) = 1.035$, $p = .448$, partial $\eta 2 = .318$. Even though there is no significant difference between genders, this needs to be taken with caution as over 65% of the participants were female and the results may not be totally accurate. The boxplot was examined to test for outlines and the Shapiro-Wilk's test of normality test was used to assess normality. There were no outliers found, individuals were evenly distributed among the 7-day scale and among the MEBS scale with no individuals having extremely high or low scores.

Figure 2

Correlation graph of MEBS means to amount of days exercise was completed



N = 83; Statistical significance: *p <.01

Discussion

Each individual has a different set of eating habits. They are cross-cultural however are more prevalent in the first world. While there are numerous factors that may influence eating habits, whether healthy or disturbed. Literature does suggest that athletes or individuals with higher levels of activity are more prone to disordered eating habits. By analysing the literature, it was prevalent that it was also mostly focused on females with some exceptions of professional male athletes. The primary objective of this study was to identify if individuals who regularly exercise have more disordered eating habits compared to individuals who do not exercise regularly. The secondary objective was to analyse if there is a correlation between levels of exercise on a seven-day continuous scale and disordered eating habits. The findings show that as the increase in physical exercise goes up on the seven-day point scale, the MEBS score increases, suggesting higher levels of disordered eating habits. With the minimum score being 30, and the maximum 120, individuals who are classified as non-regular exercise, as a group have a mean score of 60.52. The group of individuals who classify as regular exercise have a mean score of 69.40. This can also be corroborated by the mean score's individuals on each exercise day. The mean score for the group of participants who exercise 3 days per week is 66.81; the mean for the group of participants who exercise 5 days per week is 67.39 and finally the mean for the group of participants who exercise 7 days per week is 75. This shows an increase in disturbed eating habits as the amount of exercise increases. Therefore, the first hypothesis being, "individuals that exercise regularly have higher levels of disordered eating habits compared to individuals who do not exercise regularly". In this instance, we reject the null hypothesis due to a statistical significance in the data. The second hypothesis being, "the more

days a week an individual exercises, the higher level of disordered eating habits that they have". Therefore, we accept the null hypothesis, as there was no statistical significance.

Finally, the third and final objective of the study was to investigate is there a difference among genders. The findings highlight that females are scoring higher on the MEBS survey compared to males. Both in the regular exercise category and in the non-regular exercise category. Females who regularly exercise have the highest mean score at 72.53 as a group out of the four categories. Followed by males who regularly exercise with a mean of 66.13 which is 6.4 lower than females. Continuing on, there are non-regular exercise female with a very close score of 64.21 while is less than 2 points lower and finally non-regular exercise males who are over 11 points lower on the MEBS survey compared to females who are classified as non-regular exercise. Therefore, females score higher on the MEBS survey highlighting higher levels of disordered eating habits. The third and final hypothesis is "females have higher disordered eating habit scores compared to males". In this instance, we accept the null hypothesis as there is no statistical significance.

Since there is a huge gap in the current literature, it is difficult to compare results. This study attempts to fill the gap of including participants that are not professional or elite athletes, include all ages over 18 and by not being gender specific. Most literature focuses on professional or elite athletes, especially males. Other literature strictly focuses on teenage to young adult females. Therefore, comparing the results of males from this study, or results of males from existing literature, would not be accurate since most males that are analysed would be professional competitors in a sport. There is literature to support that females are more prone to eating habit problems which is backed up by this study. However, it may not be an ideal representation since over 65% of the participants were female.

The results of this study have implications on the education of all individuals to better deal with food and exercise, also with the stigma surrounding the two. Increasing education in secondary education and third level education on this topic will provide the ability and knowledge needed for people to live healthier lifestyles physically and mentally. From the theory aspect we would be able to understand more about the human brain and why individuals form the relationships with food and exercise that they do. Whether the relationship with food and exercise is healthy or unhealthy. This would be beneficial for the psychological field and medical field.

Limitations and Strengths

During the course of this study, some limitations have been observed. One limitation is that the number of participants that have taken part and completed the survey is lower than the G-Power originally desired of 128 participants. Only 83 participants were gathered. This could be due to some variables like time and the Covid-19 pandemic. The Covid-19 pandemic restricted all participant recruitment to be completed online. It would certainly have been beneficial if face to face recruitment would have been possible, however it was safer due to the current state of the countries infection rate, to minimise contact with strangers, therefore only conducting the survey online. Time was also a limitation. If the survey was kept open for a longer period of time, it would have eventually reached the desired G-Power. Unfortunately, there is no way to have changed the issue of the Covid-19 pandemic. However, since recruitment was completed online, more extensive advertisement may have been beneficial to reach a wider audience. Since time was a primary limitation, in further studies, a longer period of time should be considered to gain participants. Also gathering the participants at a different time of year may

have been beneficial. The participants were collected during the Christmas and New Year Season, which is usually when individuals tend to spend more time out and less online.

The next limitation that can be observed in this study is an uneven number of participants between genders. Only 34.94% of the participants were male. Therefore, due to a larger sample of females compared to male, female results will be more accurate as they are based on a larger sample size. Also, the gender comparison will not be perfectly accurate and should be considered with caution due to the uneven amount of participants between genders. A way to ensure that these limitations do not reoccur in a future study is to keep recruitment open for males and close recruitment for females when half of the desired participant number has been reached. This applies for both gender intakes when half of the desired participant amount is achieved by either.

Despite the limitations of the study, it does hold some important strengths. This study attempted to fill the gap that is presented in studies that have currently been done on this topic by including 'normal' individuals and not including professional athletes. To the researchers understanding, previous research has focused extensively on professional athletes. When the research does focus on individuals who are not classified as professional athletes, it tends to skew towards adult females and teenage females. This study has also included males of all ages and all exercise levels, except professional athletes.

Practical Implications and Future Research

The research aims were to analyse if one group (i.e.. individuals who exercise regularly) have higher or lower of disordered behaviour over the other group (i.e.. individuals who do not exercise regularly), while running a correlation between the levels of exercise using a continuous scale, and the levels of disordered eating. Also, to compare the results of males and females to

analyse and differences in gender. The implications of this study would benefit further research, theory and also provide education. From further research, there would be a greater understanding of human eating habits, what drives and influences them. The theory that would come from further research would be used to educate individuals more on why they have the habits that they do and how it will impact their health. This would ideally be done throughout secondary education and third level education. This form of education would be best conducted in all types of schools and courses, not just health or nutrition orientated ones. However, with the level of research currently completed on this topic, there is not enough evidence to support or bring forward a motion to introduce such education into schools.

The possibilities for future research are endless. The topic of eating habits is so broad that it can be investigated in many ways. Further research into gender comparison would be beneficial for the purpose of understanding what the difference is, and if results are similar to this study finding why is it that females have worst eating habits. Further research should also be completed to analyse why females have higher levels of disordered eating habits. Factors such as societal pressures, family circumstances and social media should be considered in further research. Another idea for further research is to investigate the levels of exercise and why do eating habits gets progressively worst as the amount of physical exercise goes up for both genders, but once again not including athletes or professionals. Individuals who regularly exercise tend to be stereotypes as healthy, however from the results it is shown to be the opposite with non-regular exercisers having better eating habits compared to regular exercisers. It needs to be investigated why such a thing occurs as individuals who exercise seemingly do it for better health.

Conclusion

Overall, this study attempted to fill the gap on research relating to eating habits, in which the literature does not include professional athletes, however, includes males and individuals of both sex that do not regularly exercise. There is harmonious evidence that alludes to the fact that individuals who regularly exercise have worse or disordered eating habits compared to individuals who do not regularly exercise. From analysing literature on this topic, there seems to be a gap in the literature analysing this irregularity and why it occurs. Future studies can implement more analytic factors such as societal pressures, family circumstances and social media, that would analyse why this is the case, or perhaps be able to provide an explanation from this. In addition, future studies may benefit from analysing this topic in a longitudinal format to analyse changes in participants over time. The difference among genders must be examined in further detail with even amounts of participants in both gender groups as there is minimal research on the ‘average male’. The results of the study are intriguing, and this area of psychology would benefit from a further expansion in research.

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Appendix

Appendix A

Information Sheet

Please Read Before Proceeding to Survey:

Thank you for considering taking part in this survey. There are some things you need to know before beginning: Please note this study is not mandatory and you will not receive any monetary reward for your participation in this study.

The topic of research aims to look at:

'*Patterns of Eating Habits in Individuals Relating to Levels of Exercise'*

The aim for this research is to analyse the correlation between eating habits and levels of exercise. Student, Katarzyna (Kasha) Skoczen x19403762@student.ncirl.ie is completing this study under the **supervision of Lynn Farrell.**

This study has been approved by the Psychology Research Ethics Committee.

What Will Happen:

- Once you consent to the study, you will be able to complete the survey. The survey will take 5-10 minutes in time to complete. The survey has 30 questions. The Minnesota Eating Behaviour Survey (MEBS) will be used.
- You may exit the study right up to the point of submission, without penalties. Once you have submitted your survey, the data cannot be retried as it is de-identified.
- De-identified means that no identifying information will be collected, like your name, contact details or address. The only personal data that will be asked is your **age and gender**
- You have the right to not answer or respond to any question that is asked of you in the survey.
- You have the right to have any questions you have about the study or survey answered. If you have any questions after reading the information/consent sheet, please email x19403762@student.ncirl.ie before beginning the survey.
- This data is only being collected for the purpose of a Final Year Project; therefore, it will only be presented to collage officials. The anonymous data is for the purpose of a thesis, publications and conferences.
- This survey is not for a diagnostic purpose, therefore access cannot be provided to individual scores as the data is anonymous.

- You must be over the age of 18 to participate, identify as either male or female, must be a resident of Ireland and not be classified as a professional athlete.

    - A professional athlete is classified as someone who is defined by Sport Ireland as: Professional Sports People (must be paid to participate in the sport), Member of a high-performance team funded by Sport Ireland, those who compete at major international events including European and World Champions, Olympic and Paralympic Games. There is no exclusion due to culture, social status, education, marital status, living location within Ireland

- This study is of a sensitive topic as it discusses Eating Habits and Body Image. If you feel that the topics may be triggering to you, you are advised not to participate in this study.

Sample Question*: I sometimes use diet pills to control my weight?*

Appendix B

Consent Form

PROJECT TITLE*:*

'Patterns of Eating Habits in Individuals Relating to Levels of Exercise'

PROJECT SUMMARY:

This study is of a sensitive topic as it discusses Eating Habits, Exercise and Body Image. If you feel that the topics may be triggering to you, you are advised not to participate in this study.

Sample Question*: I sometimes use diet pills to control my weight?*

By clicking the consent button, you agree that:

- You read the information sheet and understand it.
- You are aware of the sensitive topic of this study and understand the risks.
- Have had all your questions answered by the researcher x19403762@student.ncirl.ie
- You know that this study is not mandatory.
- You know that you do not receive any monetary reward for your participation.
- You are taking participation in this study voluntarily.

(Consent Button Would Be Listed Here)

Appendix C

1. I can eat sweets and starches (like potatoes, pasta and bread) without feeling upset or nervous.[a,b]
2. I often diet to control my weight. (WP)
3. My stomach is too big. (BD)
4. I eat when I'm upset about things. (BE)
5. I have thought about throwing up (vomiting) to lose weight. (CB)
6. Sometimes I stuff myself with food. (BE)
7. I think a lot about dieting (or losing weight). (WP)
8. My thighs are about the right size.[a] (BD)
9. Sometimes I completely stop eating for more than a day to control my weight. (CB)
10. I feel terribly guilty if I overeat. (WP)
11. I am really afraid of gaining weight. (WP)
12. The shape of my body is fine.[a] (BD)
13. Sometimes I use laxatives (like Ex-Lax or Correctol) to control my weight. (CB)
14. My weight is very important to me. (WP)
15. Sometimes I eat lots and lots of food and feel like I can't stop. (BE)
16. My butt (behind) is too big. (BD)
17. I sometimes use diet pills (like Dexatrim, Dietac or Acutrim) to control my weight. (CB)
18. I'm always wishing I was thinner. (BD)
19. I think a lot about overeating (eating a really large amount of food). (BE)
20. Sometimes I have a hard time telling if I'm hungry or not.[b]
21. I exercise to control my weight more than other women my age.[b]
22. My hips are just the right size.[a] (BD)
23. Sometimes, when I'm with other people, I won't eat much, but later, when I'm alone, I'll eat a lot. (BE)
24. I feel fat or stuffed even after eating a normal meal. (WP)
25. If I gain a pound, I worry that I will keep gaining more and more weight. (WP)
26. Sometimes I make myself throw up (vomit) to control my weight. (CB)
27. Sometimes I eat by myself so that others won't know what I'm eating. (BE)
28. When I get upset, I'm afraid that I will start eating. (BE)
29. I often weigh myself to see if I am gaining weight. (WP)
30. I sometimes use medicine that makes me lose water (diuretics like Sunril, Aqua-Ban, Pamprin, or Midol PMS) to control my weight. (CB)

Appendix D

Debriefing Sheet

Thank you very much for completing this survey!

Please click the submit button below to submit your responses!

This study aims to explore whether there is a relationship between frequency of exercise and patterns of eating habits. It also aims to examine whether there are differences in eating habits between men and women who are regular or non-regular exercisers.

To contact the researcher please email x19403762@student.ncirl.ie

- If you have been affected by the content of this questionnaire. Please contact the following numbers or follow one of the links.

- Bodywhys – The Eating Disorders Association of Ireland (01-2107906)

https://www.bodywhys.ie/contact/

- HSE (116 123)

https://www2.hse.ie/mental-health-issues/eating-disorders/

- Jigsaw

https://jigsaw.ie/body-image-and-mental-health/

Again, thank you very much for completing this survey!

Appendix E

ED: Eating disorder (consensus diagnosis made at probable or definite level of certainty); WP: Weight Preoccupation subscale; BD: Body Dissatisfaction subscale; BE: Binge Eating subscale; CB: Compensatory Behavior subscale.

[a] item was reverse-scored prior to analysis.

[b] item is not included on any subscale.

[4] In addition to "Circle One," more complex instructions are included on the version of the MEBS with a 4-point response format. Specifically, they state, "Instructions: This questionnaire contains a series of statements that you can use to describe your perceptions about eating and your body. After each item is a scale like this: T t f F. The meaning of the four possible answers is: T=Definitely True; t=Probably True; f=Probably False; F=Definitely False. You should read each statement and decide how you feel about it. First decide if the statement is generally true or generally false of you. Then, indicate how certain you feel–is this definitely or only somewhat accurate–by circling the letter that corresponds with your answer. So, if the statement or item is definitely true for you, then you should circle the T like this: (*example of correctly circled* "*T*" *here*). If the statement or item is probably true for you (more true than false), then you should circle the t like this: (*example of correctly circled* "*t*" *here*)." Like the version with a dichotomous response format, no specific time frame is specified.