

Evaluating the Impact of Exercise on Mental Health during Menstruation Statistical evaluation on the outcomes of regular aerobic exercise on the psychological and emotional well-being of a woman during menstruation

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ABSTRACT

Regular aerobic exercise is a common solution used to avoid physical cramps and pains in the body during menstruation. However, some scientific studies have proven that steering clear of physical pain is not the only advantage of regular exercise in women. This study was conducted to evaluate the extent to which regular aerobic exercise has an impact on mental and psychological well-being during menstruation. A statistical evaluation was taken ahead through the process of sending out a questionnaire to women of different age groups between the ages 10-50. This questionnaire was answered by 48 women who all had varying exercise rates.

Keywords: *Psychological well-being, mental health, aerobic exercise, menstruation.*

INTRODUCTION

Menstruation is a reproductive function; it is the periodic discharge of blood and tissues from the uterus as a result of shedding of endometrium. This natural process is a part of most women's lives and can have a few symptoms. During this period, a woman may face multiple symptoms including mood swings, irritability, moodiness and other psychological impacts, abdominal and pelvic menstrual cramps, lower back pain, bloated feeling, fatigue and headaches.

There are multiple factors that may impact the level of these symptoms. Exercise is one of the most common methods practiced to avoid physical pain during menstruation. Some studies have proven that regular exercise could also improve a woman's emotional well-being. The purpose of this paper is to evaluate whether *regular aerobic exercise plays a role in the overall psychological and emotional wellbeing of a woman during menstruation.*

BODY

During the cycle, the female uterus prepares itself for the implantation of a fertilized egg; menstruation occurs when the egg is not fertilized and the uterus lining or endometrium is shed from the body. This cycle lasts for 28-35 days and consists of 2 main periods. In the follicular period, the egg matures, the follicles develop and ovulation occurs. During this period, the endometrium thickens and repairs. After this period comes the luteal period, which is when the uterus continues to develop but the fertilization of the egg causes the corpus luteum to break. At the end of this phase, female hormones estrogen and progesterone suddenly drop to extremely low levels.

Based on most studies, estrogen is linked to mood disruptions in the body and a woman's emotional and psychological well-being. Estrogen is a hormone that impacts all parts of the body including the brain. When estrogen is high, the number of serotonin receptors in the brain increases which causes an increase in serotonin. (5-HT) Serotonin is a hormone that plays a key role in a woman's mood and is widely known as the 'happy chemical'. The low estrogen levels at the end of the luteal phase are what causes the drop in serotonin levels leading to impacts on the psychological and emotional well-being of a woman.

Serotonin is associated with depression, anxiety and mood disorders and most medications for psychological issues contain this hormone to improve mental health. Serotonin is also associated with sleeping patterns as it is directly linked to producing a hormone named melatonin that impacts the sleep-wake cycle. Overall serotonin has a major impact on mental health.

Aerobic exercise is a key solution to many physical issues. It helps in maintaining a healthy BMI, reduces the risk of various diseases such as diabetes, metabolic syndrome, cardiovascular diseases. One immediate benefit of aerobic exercise is improvement of mental health. Many studies have proven that physical activity could reduce feelings of anxiety and depression while improving the sleeping pattern. A vast number of research studies suggest that exercise is directly linked to the brain serotonin(5-HT) function, the release of the hormone and neurotransmitter dopamine (DA) and the release of another neurotransmitter named noradrenaline (NE). These three major monoamine neurotransmitters are modulated by exercise which help the body work against neurological disorders and improve psychological well-being.

A certain study done on the monoamine connection of exercise benefiting brain function proved the impact of aerobic exercise on the production of 5-HT, DA and NE. When aerobic exercise takes place, motor activity increases the firing rates of serotonin neurons which increases the synthesis of serotonin. The striatum, or the brain's reward center anticipates motivation, reward and pleasure and this increases the dopamine receptors which in turn increase DA levels.

The *purpose* of this statistical study is to evaluate the extent to which regular aerobic exercise and physical activity help in improving the psychological and emotional wellbeing of a woman during and before menstruation.

METHOD

This statistical study was taken in the form of a questionnaire to 48 women between the ages of 10 and 50. The survey included questions on the rate of exercise done by the individuals and the psychological and emotional symptoms they face during their menstrual cycles. The women were separated based on their age groups 10-20 yrs, 21-30 yrs, 31-40 yrs, 41-50 yrs.

RESULTS

To get the most accurate results, the survey was answered by a similar ratio of women for all ages. This can be seen in Figure 1.0. 25% of the people (12 people) were in the age group of 10-20. In these 12 people, 8.3% of them rarely or never practice aerobic exercise, 25% do it once a month, 33.3% do it once a week and another 33.3% take part in physical activity once or twice everyday.

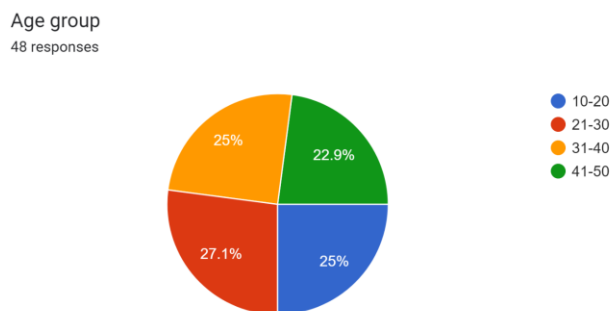
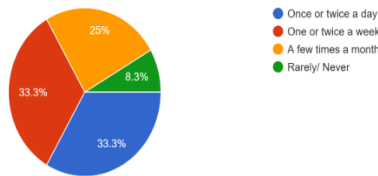
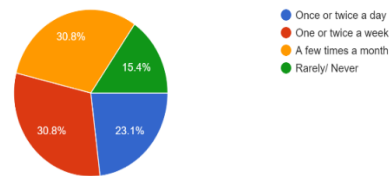


Figure 1.0

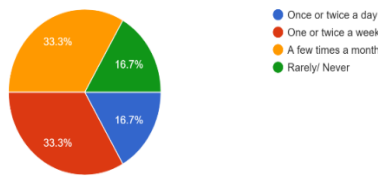
How often do you exercise or take part in physical activity? (could be playing a sport, cycling, jogging, swimming, etc)
 12 responses



How often do you exercise or take part in physical activity? (could be playing a sport, cycling, jogging, swimming, etc)
 13 responses



How often do you exercise or take part in physical activity? (could be playing a sport, cycling, jogging, swimming, etc)
 12 responses



How often do you exercise or take part in physical activity? (could be playing a sport, cycling, jogging, swimming, etc)
 11 responses

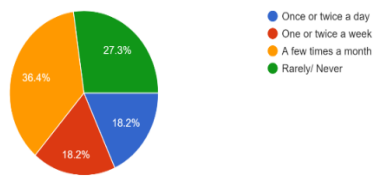


Figure 2.0: 1=> 10-20yrs 2=> 21-30yrs 3= 31-40yrs 4=> 41-50yrs

Figure 2.0

In figure 1.0, it can be seen that 27.1% of the respondents were in the age group 21-30. Figure 2.0 shows that the highest percentage of them either practice exercise once or twice a week or a few times a month. 23.1% do it once or twice a day and 15.4% of them rarely or never do it. In the age group 31-40, the highest percentage of them, 33.3% take part in exercise a few times a month and the same percentage of people do it once or twice a week. 16.7% of the people do it once or twice a day and another 16.7% of people do it rarely or never.

The last age group that took part in the questionnaire were between 41-50, 22.9% of the respondents consisted of this age group. In this group, the highest percentage of 36.4% of the people did regular aerobic exercise only a few times a month, while a whole 27.3% of the women rarely or never practiced and took part in physical activity. A low combined percentage of 36.4% of the women took part in exercise either once or twice a day or once or twice a week. This data can be seen in Figure 2.0.

From this data it can be observed and concluded that the average amount of aerobic exercise practiced by the women decreases as the age group increases. Although, it can be seen that rarely or never taking part in exercise has a low percentage on average in all age groups. The percentage of people who exercise a few times a month stayed constant in all age groups.

The next several questions were based upon the mental stability and the respondents general physiological state during their menstrual cycle. In the first group (10-20 yrs), women who maintained regular exercise once or twice a day or a few times a week, only a few of them faced mood swings and irritability while none of them faced depression. Women who exercised once or twice a day had an average overall mental well-being of 4.5/ 5 while the women who exercised once or twice a week had an average overall mental well-being of 3.25/ 5 during their cycle.

Contrastingly, a high percentage of women who exercised a few times a month rarely or never faced multiple symptoms including constant mood swings, stress, depression and irritability. Girls of age 10-21 who practiced aerobic exercise a few times a month had an average overall mental well-being of 3.33/ 5 during their cycle. In the same age group, girls who exercised rarely or never had an overall average mental well-being of 2 /5 during their cycle. Overall, it can be seen how regular exercise and mental well-being during the menstrual cycle are interconnected. More regular and constant exercising has a positive impact on a woman's mental health and this supports the thesis.

There were similar results observed in the age groups 21-30, 31-40 and 41-50. Women who exercised once or twice a day or few times a week only experienced slight irritability and a few mood swings, in a rare case of other symptoms. The overall mental-state during menstruation for these women was never less than 3/ 5, having a high overall average. On the contrary, women who exercised a few times a month or rarely faced high combinations of mental-health and psychological symptoms including constant mood swings, stress, depression, irritability, anxiety and insomnia. Another aspect to be noted is that the overall mental well-being of these women had an overall average of 2/ 5. This was noticed in all age groups, the number of symptoms increasing as the age group increased and the rate of exercise decreased.

Analyzing data based on the age group, the first age group, 10-21 years, had an average overall mental-well being during menstrual cycles of 3.6/5. The age group 21-30 years had an average of 2.9/5. The age group 31-40 had an average of 3.2/5. The age group 41-50 had an average of 3.1/5. The age with the lowest average being 21-30 years. There might be multiple factors causing this; these factors were not explored in this study.

CONCLUSION

From the results, it can be observed that physical activity and aerobic respiration do have an impact on a woman's psychological and emotional well-being in every age group. Although it can be noticed that irritability is mainly a constant in all factors, mood swings, stress, depression and anxiety are all mainly impacting women who do not take part in sufficient aerobic exercise.

The main thesis of this research paper has been explored and has been proven to be partially correct. Although there is no evidence found that regular aerobic exercise plays a direct role in the overall psychological and emotional wellbeing of a woman during menstruation, it has been proven that there is an inter-connection between these variables.

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