

Exercising Regularly Against of the Negative Psychological Effects of the COVID-19 Pandemic Lockdown

الانتظام بممارسة الرياضة في مواجهة الآثار النفسية السلبية الناتجة عن الإغلاقات
بسبب وباء COVID-19

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Received: 05/03/2022

Accepted: 11/04/2022

Published: 28/06/2022

Abstract:

This study aimed to investigate the level of some psychological aspects (depression, anxiety) among the individuals during the COVID-19 pandemic lockdown, as well as to the effect of the regularity sports activities on these aspects. To achieve this, we used the quasi-experimental approach on a sample consisting of (n=82) untrained healthy male with age average (26.6±2.3). In addition, because of the home quarantine and to reduce face-to-face interaction, an electronic questionnaire was used by Google form, where this questionnaire, in its final form, composed (30) paragraph which evaluate the depression and anxiety.

This study indicated an increase in the depression and anxiety level among the study sample in the pre-measurement of the two groups (control and experimental), which came with a very high mean.

The study also showed that there are statistically significant differences between the pre and post measurements and favour of the post-measurement after applying the program of sports activities.

Keywords: Depression; Anxiety; Corona virus; Sport activities; Home quarantine

ملخص:

هدفت الدراسة التعرف إلى مستوى بعض الجوانب النفسية (القلق، الاكتئاب، القلق) للأفراد في ظل تفشي وباء فيروس كورونا، كذلك إلى تأثير الانتظام بممارسة الأنشطة الرياضية وفق برنامج على تلك الجوانب. ولتحقيق ذلك استخدم الباحثان المنهج التجريبي على عينة تكونت من (ن=82)، بمتوسط العمر (26.6±2.3) سنة. ولتقليل التفاعل وجهاً لوجه تم بناء استبانة الكترونية باستخدام (استبانة جوجل) حيث تكونت بصورتها النهائية من (30) فقرة تناولت الاكتئاب والقلق حيث تم الاستعانة بتطبيقات زوم وسكاي بي في متابعة عينة الدراسة خلال مرحلة تطبيق البرنامج. وأظهرت نتائج الدراسة أن مستوى الاكتئاب والقلق كان مرتفعاً قبل تطبيق البرنامج الرياضي، وأن هناك فروق

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جوهريّة في قيم المتوسّطات الحسابية ولصالح القياس البعدي حيث جاء مستوى الاكتئاب بدرجة منخفضة والقلق بدرجة متوسطة
كلمات دالة: الاكتئاب؛ القلق؛ فيروس كورونا؛ الأنشطة الرياضية؛ الحجر المنزلي

I -Introduction:

The Coronavirus rapid spread has prompted countries of the world to take a set of strict measures to limit this spread, as we see huge closures in public and private institutions, imposing travel restrictions in addition to the vast amount of information and discussions of this crisis on traditional and social media (Stevens, 2020). Countries have also tended to close fitness centres and playgrounds, thus individuals are unable to participate in any external physical activity, and this leads to decrease the physical fitness level, the emergence of some negative behavioural habits such as sleep disorders and negative dietary patterns, thus increase their weight (Hagerty, 2020); (Mann, 2020). Various countries have also turned to home quarantine for individuals, and this leads to physical inactivity, which is accompany by many harmful health changes such as obesity, muscle atrophy and decreased aerobic capacity (Güzel, 2020). Where studies have indicated that the Coronavirus rapid spread has led to various social, economic and psychological crises (Serafini, 2020). It is noticeable that most countries of the world focused on physical health, which was represent in the search for treatments and working to find an effective vaccine with a clear disregard for the mental health of the general population during the period of closures resulting from the rapid spread of this virus (Zarocostas, 2020) .

There is no doubt that home quarantine and the lockdown negative effect on the mental health of the general population due to many factors such as social isolation and distancing, unemployment and the possibility of contracting the virus (Brooks, 2020); (Sritharan, 2020); (Xiang, 2020). Exercise also contributes to improving self-confidence and reduces the risk of depression and mood improvement (Behrozian, 2007). (Mohsen, 2010), indicates that stress leads to a weak level of focus, problem solving, decision-making, as well as symptoms of some diseases, depression and anxiety. According to the epistemic behaviour theory, coping strategies have an important role in reducing stress and thus mental health, and therefore when someone has better sources of coping, the probability of suffering in difficult circumstances is less likely (Bao, 2010).

On the psychological side, there is clear evidence for the positive role of physical activity in improving mental health and controlling on the depression and anxiety during this pandemic (Cooney, 2013). In addition, exercise contributes to

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the control of cortisol hormone levels in the body, which contributes to reducing stress and the risk of depression (Taspinar, 2014). While not neglecting the positive role of regular physical activity on the health of the brain and thus improving motor communication networks, Figure (1) illustrates the relationship between exercising sports activities with the psychological aspects and their relationship to the immune and nervous system (Alicia, 2015). Where studies indicate that people who have a high level of stress are more likely to be effective, due to a defect in the regulation of hormonal secretion, and this reduces their immune response as a high level of cortisol hormone contributes to the inhibition of this response (Schmidt, 2014).

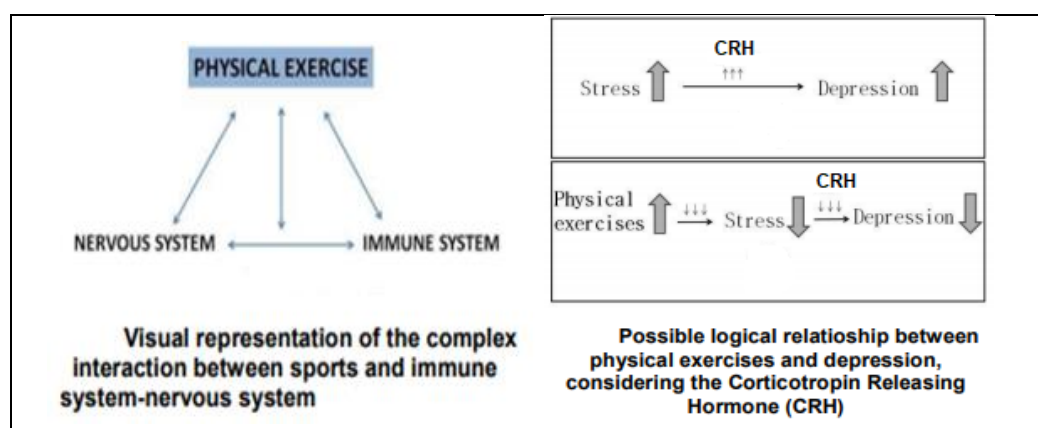


Fig 1. The relationship between sports activities with psychological aspects and their relationship to the immune and nervous system (Alicia, 2015).

A large of research has indicated in the past few years that immune changes can be link to depressive disorders and symptoms associated with stressful life events. These related immune changes have been see as a link between depression, stress, and an increased risk of immune-related diseases, such as cancer and autoimmune disorders, infection including (HIV). However, there was a lack of substantial evidence supporting the relationship between depression or stress and an increase in diseases or deaths due to disorders involving the immune system (Hoseinzadeh, 2016).

Studies show that the practice of physical activity at least (3) times a week for (30) minutes and with moderate intensity helps to reduce stress and depression symptoms, as well as facilitating the release of the Endorphin hormone, which is related to the immune system since immune cells are capable of producing this hormone, reflecting the bilateral relationship between the nervous and immune

systems which can be improved as a response to a physical activity practice (Campbell, 2018); (Alack, 2019).

A forced cessation of exercise for a prolonged period leads to a decrease in the level of maximum oxygen consumption limit (VO₂ max), endurance and muscle strength and mass (Paoli, 2020). Where studies indicate the positive role of physical activity through improving the general health level, the work of the heart and circulatory system, respiratory and immune system functions. In addition, regularity in the exercise of physical activities helps in the efficiency of individuals to face metabolic disorders and joint diseases (Wu, 2020). It is also recommend practicing active lifestyles to counter the negative effects of this epidemic on mental health and psychological aspects (Jiménez-Pavón, 2020).

The researchers launched the idea of this paper through the home has become the only place for physical activities during the spread of this virus and the consequent closures where the individuals depend on government sources and social media to receive instructions and information as this information focuses on public safety measures and eating balanced food and medical information, where the researchers noted a decrease in information introduction to individuals related to the importance of psychological aspects and the exercise of sports activities and their positive role in regulating the level of hormones in the body, which reflects positively on the effectiveness of the immune system they have and thus they are more able to confront this virus. Accordingly, this study aimed to identify the level of depression and anxiety during the COVID-19 pandemic lockdown, in addition to the effect of physical activity on these psychological aspects.

II – Material and Methods:

1- Participants:

To achieve the objectives of the study, we have been using the Quasi-experimental approach and sports activities program on (82) untrained healthy male (age, 26.6 ± 2.3) years, and divided into two groups (41) as a control group and (41) as the experimental group. Noting that the study sample did not suffer from any disease and they have never practiced these exercises. So, the study sample was distribute among the governorates (Amman, Zarqa and Irbid).

2- The experiment:

Due to curfew in the country and to reduce interaction face to face, an electronic questionnaire was built by using (Google forms), through the use of (DASS-21) scale which consist of (14) paragraphs to measure the depression and

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anxiety level (Moussa, 2001). By sending the link on the WhatsApp application, where the study sample was confirmed after completing the questionnaire, by pressing send. The study consisted of (7) paragraphs associated with anxiety and (7) paragraphs associated with depression. After measuring the psychological aspects level (depression and anxiety), a program that includes a set of sports activities that can be practiced at home was sent through WhatsApp application. Where the experimental group was asked to practice these activities for 30 minutes and (3) times per week for a period of (4) weeks, after the appropriate warm-up procedure with a focus on practicing these activities with moderate intensity (55-70) % of the maximum heart rate, because they are Irregular in sports activities. In addition, the researchers also suggested the following activities: running on the place, stranding, stepping up and down stairs, push-ups, abdominal exercises, short-distance running and squat exercises. Where the experimental group was contacted during the performance of these activities through the Zoom and Skype applications. Noting that the control group did not engage in any physical activity during the study period. However, recommend against exercising if you are experiencing any of these symptoms: severe sore throat, body aches, shortness of breath, general fatigue, chest cough, or fever. You should also seek medical care if you are experiencing those symptoms. Where it was agreed with the study sample to practicing the exercise at the same time specified (11-12). Where the experiment was applied in the period (1 -30/ 4 /2020). The maximum heartbeat calculated by the following equation: $HR_{max} = 207 - (0.7 \times \text{Age})$. The heart beat calculated by using the Garmin clock.

3- Scientific coefficients of the study tool:

To verify the validity of the study tool, we presented it to a committee of (five) arbitrators with competence and experience from the faculty members at the University of Jordan to find out the suitability of paragraphs of this questionnaire and its ability to achieve the goal of the study. In addition, we used the fifth Likert scale to measure how participants feel about each paragraph (Table 1). This study was conducted at the end of April.

Table 1. The stress and optimism scales of the study sample responses

The response	Degree	Average	Level
Very often	5	More than 4.20	Very high
Fairly often	4	3.40- less than 4.20	High
Sometimes	3	2.60- less than 3.40	Moderate
Almost never	2	2.60- less than 1.80	Low
Never	1	Less than 1.80	Very low

To verify the consistency of the study tool, we used the Alpha Cronbach coefficient, where its value reached (0.78) for the anxiety paragraphs, and (0.82) for the depression and these values are considered a high indicator of the study tool stability.

4- Ethical considerations:

The study sample was informed that their participation in the study will remain anonymous and that their privacy is respected. They were provided with a comprehensive explanation that their participation in the study was voluntary and that they could withdraw at any time. Written consent was obtained from all study participants, as the questionnaire included a paragraph related to approval of the study. As blood samples were not taken, the experiment was limited to performing a set of exercises and answering the items of the study tool.

5- Statistical analysis:

To achieve the objectives of the study and answer its questions, the researchers used means, standard deviations, paired and independent sample T. test by using SPSS version 24 with a confidence level of 95% (p value < 0.05).

III –Results:

This study aimed to identify the level of depression and anxiety during corona virus crisis, in addition to the effect of physical activity on these psychological aspects. Table 2 indicates the mean of anxiety and depression domains in the pre and post-measurement. Where the level of significance was to Shapiro-walk test (0.815) for control group and (0.672) for experimental group which a greater than 0.05 and an indication of the homogeneity of the study sample in the pre-measured for both groups.

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Table 2. Results of paired sample T. test for anxiety and depression among the control and experimental groups (n=144)

Groups	Variables	Pre- measured		post- measured		df	P.value Sig
		Mean	Sd	Mean	Sd		
Control	Anxiety	4.29	0.62	3.92	0.38	40	0.172
	Depression	4.33	0.52	3.96	0.41	40	0.362
Experimenta l	Anxiety	4.24	0.47	3.14	0.38	40	0.010*
	Depression	4.36	0.44	2.55	0.29	40	0.005*

(*) Significant at $P < 0.05$

Table 3. Results of independent sample T. test for anxiety and depression among the control and experimental groups in post measurement (n=144)

Variables	Mean		T	P.value Sig
	Control	Experimental		
Anxiety	3.92	3.14	19.93	0.000*
Depression	3.96	2.55	2.98	0.021*

*Statistically significant P.Value <0.05

IV – Discussion:

Corona pandemic imposed on all countries of the world to take many strict procedure's, such as home stone, which has many negative effects such as physical isolation, loneliness, inability to go to the centres of physical fitness and high level of anxiety, stress and negative feelings. By reviewing of mean values of the depression and anxiety among the study sample at pre- measurement among both group which came at a high level (4.36 , 4.24) in experimental groups and (4.33 , 4.29) in control groups, respectively. This reflects the negative effects of home stone among the individuals, (Schyns, 2020) also, indicates that home stone is tense and anxious because of the distance from friends and lack of clarity of the individual's vision about the time return to normal life and this explains the reason for the increasing demand of the individuals for counselling from psychiatrists online. Where the blurring of vision contributed, the lack of sufficient information about this virus and the spread of crisis led to the collapse of the health system in some countries such as Italy. The imposition of curfews has also contributed to the increased social isolation of individuals and it is natural

that individuals feel stressed and anxiety for several of reasons, including inability to receive medical care in facilities Health for fear of contracting this virus, fear of loss of livelihoods, social isolation that effects on people's social relationships and leads to boredom and loneliness.

Noting that the level of these psychological aspects among the individuals is related to the efficiency of theirs immune system, as this system is affect by many variables, including social life, mood, depression and anxiety. Where studies indicate that people who have a high level of stress are more likely to be affect, due to a defect in the regulation of hormonal secretion, and this reduces their immune response as a high level of cortisol hormone contributes to the inhibition of this response (Alicia, 2015). Indicating that the serotonin hormone a mood-boosting effect hormone or also known as nature's feel-good chemical. It is associated with learning and memory, regulating sleep, digestion, regulates mood. Due to the imbalance of serotonin in the body, the brain does not produce enough of the hormone to regulate mood or stress level. A low level of serotonin causes depression, migraine, weight gain, insomnia, craving of carbohydrates. The excess level of serotonin in the body causes agitation, stage of confusion, sedation. In addition, Adrenaline hormone initiates the quick reaction, which makes the individual think and respond quickly to the stress. It increases the metabolic rate, dilation of blood vessels going to the heart and the brain.

During the stressful situation, adrenaline quickly releases into the blood, send impulses to the organs to create a specific response. Furthermore, the failure of individuals to comply with government decisions and public safety measures contributed to the high level of these psychological aspects, given that there is a long incubation period for this virus, which may extend to (21) days. Also, the huge amount of information on social networking sites that may be inaccurate can contribute to the negative impact on the psychological aspects of individuals, in addition to that, the hearsay spread on these sites contribute to the blurring of vision for individuals. Likewise, the constant focus of communication on this virus, in terms of development in the number of infected and dead people, may contribute to the confusion of individuals and become fearful of the future. The problem here is that some individuals may resort to increasing eating as a means of escaping stress, which doctors and specialists call emotional eating where the dietitian indicates a strong relationship between exposure to stress and weight gain can be explained that during increased level of stress accompanied by increased of cortisol hormone in the body where it is considered to be a light of

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appetite and thus may lead to the accumulation of fat in the body and thus the metabolism becomes slower

By reviewing the mean values of the depression and anxiety level among the experimental groups after practicing sports activities, it came with a moderate mean of the anxiety variable (3.14) and low mean of the depression variable (2.55). There were also statistically significant differences between the pre and post -measurements in the level of psychological aspects and favour of the post measurement, and due to the importance and effectiveness of the immune system of individuals in facing this virus, it was necessary to pay attention to all variables that could contribute to increasing the level of this effectiveness, where there are interrelationships between the practice Sports activities, regulation of the level of hormones in the body and the efficiency of their immune system. As the regular practice of sports activities contributes to reducing stress and symptoms of depression, it also contributes to facilitating the release of the hormone endorphin, which is linked to the immune system, as immune cells can produce this hormone and this reflects the bilateral relationship between the nervous and immune system, which can be improved in response to the practice of physical activities with no Ignoring its role in the secretion of the hormone serotonin, and this positively affects the immune system to better deal with the infection direction from others. Moreover, it contributes to controlling the level of cortisol in the body, which leads to reducing stress and reducing the risk of depression. August in addition to improving self-confidence and improving mood. Additionally, there was an improvement in the life satisfaction and emotions level among the control group, but it was not statistically significant, the researchers believe that with the passage of time, an adaptation to stresses occurs and the vision becomes clearer with regard to this virus, and the procedure's taken by the state may have contributed to this.

Finally, the effectiveness of these psychological aspects leads to an improvement in the level of focus, the ability to solve problems and decision-making, thus reduces general stress, and raises the level of quality life they have, because positive thinking will reflect on the future life of these individuals, which may extend beyond this stage. Here, it is necessary to focus on regularity in exercising sports activities to a moderate degree and not excessive in this practice, because unexplained sports practices may harm the immune system of individuals because of increased secretion of the hormone cortisone and adrenaline in the blood. Where depressive symptoms were associated with a decrease in the natural

killer cells (NK) and (T) cells in the immune system due to high hormone (CHR), which reduces the immune response.

V – Conclusion:

In light of the Corona virus crisis, many reasons that can contribute negatively at the level of psychological aspects of individuals, such as lack of clarity of vision among individuals with regard about preparing the injured and fear for the professional and academic future, lack of commitment to public safety instructions and government decisions, but the positive thinking and regularity in the practice of sporting activities and their inclusion among the main tasks of the individual can contribute to finding a positive relationship with the hormonal and immune system of the body and thus increase the efficiency of the individual in facing this epidemic without affecting them in the future. Those in charge of health care must focus on taking some strategies that would contribute to exercising physical activity regularly during quarantine at home, as well as working on applying some psychological methods that would reduce negative psychological effects on individuals such as positive talk with the self and the practice of yoga.

Conflict of Interest Statement:

We declare no competing interests

Funding:

This scientific research did not receive any financial support

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How to cite this article according to the APA method:

*Ayed Ali Zureigat, Osama Mahmoud Abdel Fattah (2022) , Exercising Regularly Against of the Negative Psychological Effects of the COVID-19 Pandemic Lockdown, **International Journal of Studies & Research in Sport Sciences & Training**, Volume: 03 / N°: 01 (2022), Hassiba Ben Bouali University, Chlef, Algéria, P 51-62.*