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The Effects of Physical Activity on People’s General Health During the COVID-19 Pandemic: A Literature Review

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Abstract:

In this theoretical study the researcher aims to emphasize the critical role of physical activity during the COVID-19 pandemic to the health and well-being, through addressing the coronavirus disease and the implications of coronavirus in physical and mental health, as well as; the after-effects resulting from the lockdown on physical activity and how physical inactivity has become one of the major problems of health care systems, therefore; how can physical activity help to improve people’s general health during the COVID-19 pandemic in the light of recent studies. The researcher used the content analysis method to illustrate the concepts touched upon in the current article.

Keywords: Physical activity; COVID-19; Coronavirus; Pandemic; General health.

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1. INTRODUCTION

Coronavirus or COVID-19 is a novel pathology due to SARS-CoV2 infection, which causes the respiratory complications, was first detected in the city of Wuhan, China, in late 2019. The outbreak spread quickly across the globe in the first months of 2020 and declared a global pandemic by the World Health Organization (WHO) on 11 March. Therefore, Coronavirus is continuing its spread across the world with more than 65 million confirmed cases in 190 countries and about 1.5 million deaths. (John Hopkins University, 2020) It is a pandemic when an infectious disease is passing easily from person to person in many parts of the world at the same time; which has been forced governments across the world to limit public movement and close businesses and venues in a bid to slow the spread of the virus; this has had a devastating impact on the global economy. (The Visual and Data Journalism Team of BBC News, 2020) On the other hand, the lockdown and social distancing restrictions has had a dramatic effect on the sport sector that has been hit severely particularly in economic terms including sport organizations and clubs, leagues, fitness centers, athletes, coaches, sport staff, sport volunteers and sport-related business, sport event organizers and sport media. (Council of the European Union: general secretariat, 2020) Besides, due to the COVID-19 attack, tens of thousands of patients have been hospitalized, with additional thousands of millions of people forced to stay in limited space. Conceivably, this dramatic change in lifestyle, resulting from immobilization (hospitalization and bed rest), quarantine, and physical inactivity can cause a second-wave attack on the health and wellbeing of the infected as well as general population (Gasmi, et al., 2020). In this area, a recent survey of Jordanian adults (1844 participants) during the confinement has revealed that the majority (41.8–42.2%) of participants reported a “decrease” (in walking, jogging, and sports while the majority (46.3–53.1%) reported a “no change” in swimming, cycling, and weight lifting. With regard to the sedentary behavior, most of the participants reported an “increase” in watching TV (72.3%), using electronics (82.7%), and logging to social media (81.9%). Additionally, gender, job type, obesity, and being worried to contract the disease were associated with changes in physical activity. However, age, gender, obesity, job type were related to changes in sedentary behavior; (Alomari, Khabour, & Alzoubi, 2020) due to this drastic changes physical inactivity has become one of the major worldwide problems which its consequences on people's health should not be ignored. In this area; numerous studies have mentioned the benefits of physical activity for general health during

the quarantine: one of which has addressed the relationship between changes in physical activity and sedentary behaviors during the lockdown and changes in physical and mental health which indicated that practicing physical activity and reducing sedentary time during lockdown could benefit individuals' health, (Cheval, et al., 2020) Another a study has shown that people's physical activity decreased during COVID-19 lockdown, and was associated with a decline in psychological health, (Suzuki, Maeda, Hirado, Shirakawa, & Urabe, 2020) Likewise; a study covered a large sample of Spanish confined adults indicated that practicing physical activity in compliance with WHO guidelines in the initial phase of COVID- 19 confinement significantly associated with lower perceived anxiety and lower perceived worse mood. (Lopez-Bueno, et al., 2020) Furthermore, physical activity has a positive effect not only on mental health but also physical activity strengthens the immune system; it was shown that moderate physical exercise reduces the severity of and complications in viral infections, such as influenza (Frühauf, Schnitzer, Schobersberger, Weiss, & Kopp, 2020)

Based on the above; it should be emphasized that we recognize the importance of physical activity as preventative measure from mental disorders and diseases during the COVID-19- pandemic and its huge benefits for well- being and general health , whether indoor or outdoor in our daily life. In this context, we therefore ask the following main question: how could physical activity benefit the individual's health during the COVID-19 pandemic?

2. The objective of the research

In this theoretical study, the researcher aims to emphasize the critical role of physical activity during the COVID-19 pandemic as a preventative measure to protect both physical and mental health, while sedentary behaviors have detrimental effects.

3. The after-effects resulting from the lockdown on physical activity

The current coronavirus (COVID-19) pandemic presents some challenges to maintaining a physically active lifestyle. COVID-19 is spread by droplet transmission – someone sneezing or coughing into the air or onto a surface, and then the virus enters a new host through the mouth, nose or eyes. In addition, based on what we know about how the virus moves from one person to another, it is recommended to avoid public gatherings and keep a social distance of 6 feet or more. That, along with advice related to personal care (hand washing, not touching your face) has created concern about exercising in gyms, where

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hundreds of people are in and out every day. (American college of sports medicine, 2020) Taking into account; the high prevalence of such virus, the governments in most countries have applied severe restrictions including a global lockdown and social distancing regulations, by the same time; the sport sector has been severely hit by the pandemic; including in economic terms. The COVID-19 pandemic is having devastating consequences on the entire sector at all levels ; especially on sport organizations and clubs, leagues, fitness centers, athletes, coaches, sport staff, sport volunteers and sport-related business, including sport event organizers and sport media. (Council of the European Union: general secretariat, 2020) In this regard, physical inactivity has become one of the major problems of health care systems—considering the indirect consequences maybe even the biggest health problem of our time. (Troost, Blair, & Khan, 2014) and according to a recent legal determinations published in countries like the United Kingdom and France; the practice of physical activities in open environments was recognized as an essential activity during the quarantine period. concerning United Kingdom, people were instructed to leave home for one of the four reasons: purchases of basic necessities; such as food and medicines, which should be as infrequently as possible, practicing one type of exercise a day, for example running, walking or cycling (alone or with members of family), go to work but only if it cannot be done at home. In contrast, circulation in France was allowed through presenting a form dated and signed to justify the reason for leaving home. and physical activity was considered as a permitted activity within the limits of law: short journey, limited to one hour per day and within a radius of kilometer from home, related to individual's physical activity (excluding exercising in group or being closer to other people), either to walk with people who live in the same household or to fill the needs of pets. (Gondim Pitanga, Seara Pitanga, & Beck, 2020) furthermore, in Italy, The precautionary measures have also involved sport-related activities, including walking and running outside. Therefore, home workout remained the only possibility to play sports and stay active during COVID-19 pandemic. in this context, a study that performed on 2524 participants during the COVID-19 quarantine; showed a strong reduction of physical activity levels, especially for vigorous activity and walking due to the difficulties to walk and perform an intense exercise at home compared to moderate activity; an opposite trend was found for subjects classified as low active before COVID-19, whose total physical activity energy expenditure during quarantine significantly increased. This phenomenon could be due to a radical change in everyday

schedules and habits; people remaining at home spend much more time in low-intensity activities like housework (cooking, washing dishes or gardening). Moreover, the physical activity levels significantly decreased in all age groups considered (30-60 years). (Maugeri, et al., 2020) Besides, the lockdown showed an adverse effect on some physical activity behaviors during leisure time, such as a decrease in vigorous physical activity and an increase in sedentary behaviors, the lockdown also showed a beneficial effect by increasing the time spent walking and doing moderate physical activity. (Cheval, et al., 2020) As well, COVID-19 restrictions in Japan disrupt the normality of elderly people's daily lives and enforce social distancing and self-isolation upon them, resulting in about half (47.3%) of elderly people being less active and decreasing their physical activity per week by 37.7% in total. (Suzuki, Maeda, Hirado, Shirakawa, & Urabe, 2020)

Upon the foregoing, the COVID-19 pandemic has displayed a significant influence on reducing physical activity levels in people's daily life.

4. The implications of coronavirus in physical and mental health

Coronaviruses are a family of viruses that can cause illnesses such as the common cold, severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). In 2019, a new coronavirus was identified as the cause of a disease outbreak that originated in China; the virus is called coronavirus disease 2019 (COVID-19) which now known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In March 2020, the WHO declared the COVID-19 outbreak a pandemic, therefore; this virus can cause moderate to severe medical complications such as pneumonia and trouble breathing, organ failure, hearts problems, a severe lung condition (acute respiratory distress syndrome), blood clots, acute kidney injury, additional viral and bacterial infections; and lead to death in some people. However, older adults or people with existing chronic medical conditions are at greater risk of becoming seriously ill with COVID-19. (Mayo Foundation for Medical Education and Research (MFMER), 2020) similarly, COVID-19 can lead to increase the risk of long-term health problems, in which the symptoms can persist for weeks or months. That would explain why some people even those who had mild version of the disease can feel unwell and continue experience symptoms after their initial recovery; and that is called "post-COVID-19 syndrome" or "long COVID". The most common signs and symptoms that linger over time include fatigue, shortness of breath, cough, joint pain, chest pain, muscle pain or headache, fast or pounding heartbeat, loss of smell or taste, memory and concentration or sleep problems, rash or hair

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loss. (Mayo Foundation for Medical Education and Research (MFMER), 2020) In this regard; accumulating evidence indicated that the SARS-COV-2 infection aside from the respiratory system has a significant threat to mental health, as the relatively long latency period of the virus of 5–12 days would allow the virus to considerably damage medullary neurons, and indeed, patients infected by SARS-CoV-2 reported severe neurologic symptoms manifested as acute cerebrovascular diseases, consciousness impairment and skeletal muscle symptoms. Besides social isolation often causes psychological and mental disorders including acute stress disorder, exhaustion, detachment from others, irritability, insomnia, poor concentration, fear, and anxiety. (Woods, et al., 2020) likewise; studies have reported that SARS-CoV-2 infection is often associated with neuropsychiatric manifestations, even though the underlying mechanisms that characterize SARS-CoV-2 direct or indirect effects on the central nervous system (CNS) are still unknown. In fact, in case of severe COVID-19, elderly and comorbid chronic diseases including diabetes, cardiovascular disease and hypertension, as well as chronic stress, are associated with upregulation of inflammation and presumably with predisposition to neuroinflammatory processes, in addition, neuroinflammation could be promoted as part of the sustained anti-viral immune response arising in the periphery (e.g., cytokine storm) and possibly in the brain following viral neuro-infection. (Bossù,Toppi,Sterbini,&Spalletta, 2020) Other studies measuring psychiatric symptoms during the COVID-19 have found that participants from the general public had higher scores of anxiety and depression compared to before the pandemic, but no difference when comparing these symptoms in the initial phase of the outbreak to four weeks later, furthermore; neurological symptoms occurred in more than 90% of patients with SARS-COV-2 infection; as a result women more frequently presented subjective neurological symptoms than men (Liguori, et al., 2020). Which confirm the direct effect of COVID-19 on mental health.

5. Studies that show the importance of practising physical activity for general health during the COVID-19- pandemic

Several studies have addressed the benefits of physical activity for physical and mental health, among which the impact of physical activity on psychological health during COVID-19 pandemic in Italy that measured the total weekly physical activity energy expenditure before- and during COVID-19 quarantine and assessed the relationship with the psychological well-being of 2524

participants, of which 41.76% was classified as a highly active group; the results showed that the reduction of physical activity levels is ever related to the worse status of psychological well-being. In this sense, the positive effects of regular physical activity on psychological health are indisputable in the field of modern medicine. (Maugeri, et al., 2020) Another research has found that changes in physical activity and sedentary behaviors during lockdown are associated with changes in physical and mental health; hence, Ensuring sufficient levels of physical activity and reducing sedentary time during lockdown could benefit individuals' health. (Cheval, et al., and 2020) additionally, sports participation is a preventative measure against mental health symptoms and disorders. (Reardon, Psychiatric Comorbidities in Sports, 2017) Therefore, the restriction of sports participation may have a detrimental impact to young people's mental health and well-being, the periods of inactivity, isolation from athletic teams and community and the lack of social support could cause emotional distress and psychological disorders in athletes. (Reardon, et al., 2019) Furthermore; a sample of the UK public social distancing owing to COVID-19 has demonstrated a negative association between moderate-to-vigorous physical activity per day in hours and poor mental health, moreover; the findings suggested that participating in higher levels of physical activity during COVID-19 self-isolation is associated with better total mental health status. Consequently, the UK adults social distancing owing to COVID-19 those who were physically active have better overall mental health. (Jacob, et al., 2020) A cross-sectional survey of 937 participants in Brazil indicated that people reporting over 30 min of moderate to vigorous physical activity /day or over 15 min of vigorous physical activity/ day are less likely to present depressive and anxiety symptoms. However, those reporting higher levels of sedentary behavior are more likely to present prevalent depressive symptoms, whereby the findings mentioned that participants reporting ≥ 30 min in moderate to vigorous physical activity/day were approximately 30% less likely to present depressive, anxiety symptoms. Those reporting ≥ 15 min of vigorous physical activity/day were approximately 40% less likely to present prevalent depressive and anxiety symptoms and 30% less likely to present prevalent anxiety symptoms. Those spending ≥ 10 h/day in sedentary behavior were 39% more likely to present prevalent depressive symptoms. (Schucha, et al., 2020) Additionally, the use of physical activity to prevent mental health problems during the confinement is a very adequate strategy, because previous research has found that physical activity produces not only long-term benefits in mental health but also immediate psychological benefits for mood and anxiety due to the acute effects of

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physical activity. (Szabo, 2003) (Lopez-Bueno, et al., 2020) In this respect, the WHO recommended all adults doing at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75 minutes of vigorous-intensity physical activity throughout the week. As well as, older adults with poor mobility should do physical activity to enhance balance and prevent falls on three or more days per week. Also for additional health benefits, adults should increase their moderate-intensity physical activity to 300 minutes per week, or equivalent and for developing and maintaining musculoskeletal health, muscle-strengthening activities involving major muscle groups should be done on two or more days a week. (World Health Organization, 2020) Compared to other studies from the general population during the COVID-19 pandemic; levels of anxiety and depressive symptoms were substantially lower mentioned that regular exercise induced adaptations enhance the effectiveness of immune system, which actual level could affect the severity of SARS-CoV-2 infection. (Woods, et al., 2020) Regarding the immune system, physical activity, especially at moderate intensity and duration, can favor immune responses and improve resistance of the body. On the other hand, high-intensity and prolonged exercise can cause immunosuppression and therefore should be avoided during the COVID-19 pandemic. (Gondim Pitanga, Seara Pitanga, & Beck, 2020)

Based on the foregoing discussions; physical activity has now been recommended as a therapy to fight against the mental and physical consequences of COVID-19 confinement. So, it should be mentioned that regular physical activity is important for staying healthy compared to the sedentary behavior most of the time, as well moderate-intensity physical activity is associated with better cardiovascular, metabolic and immune systems, also may reduce the risk of developing depression and anxiety and improve mood.

6. The major findings of the previous studies

The following are the most important results:

- Regular physical activity is important for staying healthy, Compared to just sitting around most of the time, moderate-intensity physical activity is associated with better immune function. As well as regular physical activity can help reduce the feelings of stress and anxiety, which many of people may be feeling in the wake of the COVID-19 pandemic? That is why the WHO recommended all adults doing at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75

minutes of vigorous-intensity physical activity throughout the week.

- Physical activity is suggested during the COVID-19 pandemic due to its diverse benefits on physical and mental health, in this context; sport participation indoor or outdoor (if it is allowed) during this time are highly needed.
- Physical activity protects both physical and mental health, while sedentary behaviors have destructive effects.
- During the COVID-19 lockdown, the increase in leisure-related physical activity was associated with increase physical health, while the increase in leisure-related sedentary behavior was associated with decrease physical health, mental health, and subjective vitality.

7. The researcher's view

In the light of the foregoing; the researcher expressed support for the idea of maintaining a regular exercise routine is a key strategy for physical and mental health during the lockdown notably the current coronavirus emergency, given that ensuring sufficient levels of physical activity and reducing sedentary time during lockdown could benefit individuals' health. Through prevents diseases, strengthens the immune system, and helps to reduce mental health symptoms and disorders.

8. CONCLUSION

To conclude, the novel coronavirus disease 2019 seems to be having a major impact on physical activity behaviors globally. The pandemic has forced many people around the world to stay at home and self-isolate for a period. Accordingly, all the previous studies conducted in several countries suggest that physical activity play a significant role during the COVID-19 pandemic in preserving mental and physical health. However, inactive persons are more likely to have symptoms of depressions, anxiety and less effectiveness of immune system compared to active persons, which could Influence the severity of SARS-COV2 infection. That is why the WHO advised people to exercise indoors and outdoors (if allowed the government) during the COVID-19- lockdown by reason to help them stay positive, active and safe. In that respect, here are some practical recommendations that can be undertaken during the present pandemic:

- Staying active at home, home-based training (e.g. aerobic exercise training, bodyweight training, dance and active video gaming etc.) assist to

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counteract the detrimental physical and mental effects of the COVID-19 pandemic.

- If social distancing is respected, allowing moderate outdoor sports activities such as jogging, walking, cycling, hiking and the use of park trails.
- Avoid vigorous intensity activity for 2 weeks after a positive test for people who are infected. In addition, stop physical activity if they develop symptoms such as a fever, cough or shortness of breath, and reach out to the health care provider.
- People must balance their workout program by reason of the fact that moderate-intensity physical activity can boost their immune system. However high volume training may suppress immune function especially if they are unaccustomed to it.

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