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Underlying reasons for the decline in physical activity during COVID-19

Zhang Y *et al.* The underlying reasons for the decline in physical activity during COVID-19

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Abstract

The article not only successfully evaluated regular physical activities can improve mental well-being during self-isolation and social distancing policies related to the corona virus disease 2019(COVID-19), but also concluded that the COVID-19 pandemic may lead to augmented levels of angiotensin-converting enzyme (ACE)-2. By reading the article of Walid Kamal Abdelbasset, we have some questions and put forward some suggestions on the content of the article.

Key Words: ACE-2; COVID-19; Mental health; Physical activity

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Core Tip: During the COVID-19, physical activity declined. There are many reasons behind this phenomenon. And the surveys in the article don't attach survey area. Additionally, the mutually affected relationship between physical activity and mental health is not clearly elaborated. The above are the areas that need to be improved in the article, and we also put forward some suggestions for improvement.

TO THE EDITOR

We were happy to read the ingenious article by Walid Kamal Abdelbasset *et al* ^[1], in which they illustrated the effect of physical activity on mental well-being during the corona virus disease 2019(COVID-19). The author not only elaborate the impact of physical activity on mental health through three sections: mental health and community, neurological manifestations related to COVID-19, physical activity and mental health, but also conclude that the COVID-19 pandemic is correlated with angiotensin-converting enzyme (ACE)-2, leading to related diseases. The article has had a significant impact on the current world that is still affected by the epidemic, but there are still some issues that need further consideration.

There are many reasons for the decline in physical activity from COVID-19. On the one hand, the COVID-19 itself can affect the body's metabolic process, directly causing musculoskeletal symptoms, such as muscle pain and numbness, and joint swelling and soreness [2]. On the other hand, the disease can affect the patient's respiratory system, digestive system and circulatory system and indirectly cause symptoms of physical decline. In the acute stage, patients often have respiratory symptoms such as dry cough and dyspnea, resulting in insufficient oxygen intake. At this time, patients often have fever symptoms. Fever will accelerate the body's metabolic process, thereby increasing oxygen consumption and further reducing blood oxygen content, and even acidosis may occur [3]. The patient is in such a state of oxygen imbalance that it is very easy for the patient to feel decreased physical strength or muscle weakness. Gastrointestinal symptoms can also occur in the acute phase, causing the patient to lose appetite. Studies have also shown that the COVID-19 may cause anosmia in patients [4]. In short, the effects of COVID-19 on patients with eating disorders will weaken the body's intake of food, thereby weakening the body's energy conversion. Without sufficient energy intake, patients often feel muscle soreness and weakness, because at this time the body has more the glycolysis pathway is used to generate adenosine-triphosphate (ATP), and the muscles use more creatine phosphate to maintain muscle activity [5]. The lactate and creatine phosphate metabolites produced by the glycolysis pathway take a longer time to complete metabolic consumption, so it accumulates in the muscles for a long time and causes muscle soreness. Therefore, we suggest that the authors supplement the reasons for the above-mentioned physical decline in order to make the theory of this review more complete and richer. What's more, not everyone's physical activity has decreased during the COVID-19 period, and some people are still able to maintain regular exercise as usual, which suggests that we need to think more deeply. During the period of the COVID-19, measures such as increasing people's ownership of sports equipment, developing interesting sports software or games, and converting ordinary sports into online sports competitions will greatly promote people's enthusiasm for physical exercise. This is something we should strive to do in the future.

In addition, the author detailed many surveys on the relationship between physical activity and mental health. However, the COVID-19 appeared in China and spread around the world, affecting populations worldwide and causing thousands of deaths [6, 7]. If the survey area can be attached to the table, and if the survey areas are diverse and extensive, then it can highly increase the reliability of the results, as well as widen the applicability of the conclusions. Thus, we suggest that the author should include the survey area in the table, so that the results of each survey area can be clearly seen, and the conclusion that physical activity affects mental health can be more convincing and reliable.

One of the conclusions of the article is that ¹exercise training for a long time does not indicate good mental well-being, but it may be a predictor of developing mood disorders [8]. But nothing is absolute, and so is the conclusion, which applies to people who are physically active for a long time, especially during lockdown periods when their need for exercise can not be met. The definition of prolonged exercise varies from person to person. Therefore, we suggest that the author should add a conditional supplement to this conclusion to increase the rigor of the article. It would be better if the author could give a general definition of exercise training for a long time in the article.

The terms exercise and physical activity are often used interchangeably, but by definition they are two different things. Physical activity is a process in which people use their skeletal muscles to consume energy to achieve human movement. Exercise is part of physical activity, and if someone runs once on a whim and then doesn't continue that activity, it's not ²exercise. Exercise is a subcategory of physical activity that is planned, structured, repetitive,

and purposefully focused on improvement or maintenance of one or more components of physical fitness [9]. People who run in the park every morning, young people who play basketball two or three times a week, old women who dance in the square every evening, they have well integrated exercise into their lives. But not everyone can exercise consistently. Many people just do physical activity and call it exercise. This is the phenomenon of combining exercise and physical activity. Doing

housework at home, walking, running and so on are just physical activities that are more common than exercise. In the future, provided that different levels of exercise are proposed to improve people's mental health, the distinction between physical activity and exercise should not be ignored.

Nevertheless, as the author wrote, ¹anxiety and depression may lead to negative effects on various quality of life domains, such as being physically inactive ^[10]. This shows that not only does physical activity affect mental health, but mental health can also affect physical activity. In other words, physical activity and mental health are closely related and mutually affected.

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