COVID-19 quarantine: Two-way interaction between physical activity and mental health

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Abstract

Recent studies have revealed that physical activity significantly reduces the risk of coronavirus disease 2019 (COVID-19) infection by strengthening the immune system. Also, regular physical activity can reduce the risks of developing physical and mental health problems such as diabetes, hypertension, coronary heart disease, stress, anxiety, depression, etc. However, the two-way interaction between physical activity and psychological symptoms has not been well addressed yet. This paper is intended to examine various dimensions of this interaction and its effects on mental health at the time of COVID-19 quarantine.

Key Words: COVID-19, mental health, physical activity.
Table 1. Summaries of psychological techniques for increasing physical activity during quarantine time (adapted from Diamond & Waite, 2020)²³

| Beliefs about activity | Cognitive biases | Cognitive restructuring | Socratic dialogue | Behavioral experiments | Savoring | Imagery |
|------------------------|------------------|-------------------------|------------------|-----------------------|----------|---------|
| Identification of cognitive biases | Cognitive biases are systematic errors in thinking that may occur during the processing and interpretation of surrounding events and affect people’s decisions and judgments. | Cognitive reconstruction is a psychotherapeutic technique of learning to identify and cope with maladaptive and irrational thoughts, called cognitive distortions. | This technique, known by various names such as Socratic questioning, Socratic method, and Maieutic method, is one of the methods used by psychologists in exploring the mind to help people discover new aspects of thinking about self and the world. | Behavioral experiments are planned experiential activities to test the validity of individuals’ beliefs about self, others, and the world, or to test new and more adaptive beliefs. | Savoring comprises the special focusing on pleasurable aspects before, during, or after an activity. Psychologists can use these techniques to evoke this memory in mind and generate motivation before repeating the activity. | Creating an image of task completion can increase the involvement likelihood by reducing the power of unhelpful images and building self-confidence. |

Motivation for activity

Goal-setting

Mental contrasting

Motivational interviewing

Imagining a different future

Psychoeducation

The sense of reward obtained from the activity

Behavioral interventions

Problem-solving

During the quarantine would be at least 30 minutes of moderate-intensity or 20 minutes of vigorous-intensity aerobic exercise training every day.²⁵ Although the effects of exercise on mental health can be enhanced by increasing its intensity, the intensity and volume of exercise should be adjusted and controlled separately for each person using professional counseling, for the sake of stimulus effectiveness.²⁶ Reciprocally, psychological barriers have long been realized as significantly important and decisive factors to prevent activity, especially among people with mental health problems. Additionally, during a pandemic, there may be additional barriers to increased activity, such as anxiety about leaving home, the closure of gym facilities, and less chance of group exercise.²³ Psychologically, three cognitive factors may be involved in an activity: (i) beliefs about the activity; (ii) motivation for the activity; and (iii) the sense of reward obtained from the activity. According to psychological theory, this complex set of considerations can be used in a meaningful psychological approach through an individualized formulation.²³

![Fig 1. Interactions between COVID-19 quarantine, physical activity, and mental health](image)
COVID-19 quarantine: physical activity and mental health
Eur J Transl Myol 2020; 30 (4): 9509. doi: 10.4081/ejtm.2020.9509

For example, as regards beliefs about physical activity, Beck’s cognitive model describes how people’s beliefs about the self, others, and the world may inhibit physical activity and are thus a key target in activity-enhancing interventions.27 Also, as to motivation, psychoeducation can increase people’s awareness of the beneficial effects of physical activity on mood and anxiety, and encourage them to make lifestyle changes.28 Table 1 summarizes other psychological techniques in this area.23,29,30

In conclusion, given the two-way interaction between physical activity and psychological symptoms (Figure 1), clinicians should assume them as a treatable clinical goal, depending on the circumstances. Moreover, due to the different benefits that physical activity provides to people's mental health, in any legal statement issued by government agencies, physical training, both indoors and outdoors, should be considered an essential application during the COVID-19 periods of isolation and quarantine.

List of acronyms
COVID-19 - Coronavirus disease 2019
WHO - World Health Organization

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