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- Letter to Editor -

Another pitch to be taken into account when debating on COVID-19 and physical exercise: psychoneuroimmunity

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Dear Editor,

We found the article of Abdelkader Jalil El Hangouche and Youssra Amekran titled: "Immune response to physical exercise: Evidence to take into account during the Coronavirus disease (COVID-19) pandemic" [1] of much professional and personal interest. A reader would assume this concise article would provide a strong rationale for recommending exercise to improve aspects of immune function, with relevance to the COVID-19 pandemic. A short manuscript clearly outlining the effects that exercise has on immune function with relevance to issues caused by the "lockdown" may be of interest to scientists, clinicians and public health policy makers. In fact, since SARS-CoV-2 emerged in December 2019 in China and the subsequent pandemic that the world became more common worldwide knowledge from January and February 2020, there have been a large number of articles published related to exercise, physical activity or physical inactivity and COVID-19 (A quick PubMed search of these terms reveals almost 1,000 results). However, what the present letter article lacks (and so do many of the published opinion articles on exercise-immunology) is a reference to the psychological impact of this infection on immunity [2], for which physical exercise could be relieving [3].

COVID-19 pandemic entails several biopsychosocial aspects that might significantly reduce immunological defences. For instance, social distancing is a necessary measure developed by health authorities to ensure safety, though it bears a multifaceted variety of psychosocial problems [4]. Anxiety, depression, stigma, anger, frustration may reduce immunity and negatively affect recovery [5]. In turn, physical inactivity might result as a consequent negative moderator of this weakening of the immune system. On the contrary, physical exercise can be positively exploited to control both immunodepression and mental health. In fact, during crisis like COVID-19, human physiology is not the sole one to be rapidly harmed by physical inactivity. Physical inactivity *per se* deteriorates mood profiles and has been associated with poor mental wellness. A macro-level stress of a pandemic virus diffusion represents an unexpected social and economic burden, thus

challenging mental health, inevitably. Therefore, there is a double hit on mental health conditions, given by the adjunctive offense of COVID-19 and physical inactivity, ultimately resulting in the deterioration of the immune system function.

Considering a major theme in the letter of El Hangouche [1] is how exercise could be immuno-modulatory, we honestly reckon that psychoneuroimmunity should be as well contemplated. We appreciate the authors' effort to raise awareness of the importance that exercise and physical activity have for overall health and wellbeing, and also immune function. Given the number of articles already published on this theme, and now that we are more than ten months into this pandemic, we think any more articles published on this topic need to cover the psychoneuroimmunity effect of exercise against COVID-19.

Particularly, an anamnestic triage for a personalized exercise prescription should be envisaged during emergencies like those due to the SARS-CoV-2 outbreak [3]. To maximize the anti-inflammatory and immune-modulatory effects of exercise, either in healthy or individuals with chronic diseases, an extensive educational approach will be required. To switch-on this lifestyle revolution, it will be necessary to involve not only clinical research and -practice, but also many health-care providers, psychologists and fitness professionals, all challenged by the heavy task of the exercise prescription.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this manuscript.

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