Dear Editors:

Since a state of emergency has been declared due to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) pandemic, Peru has adopted measures to contain the spread of coronavirus disease (COVID-19). One of them was implementing the remote working model, which allowed public and private entities to perform work remotely. Therefore, a large portion of the working population has moved to work from home, increasing the use of technological devices and sedentary behavior. As a consequence, mental health and physical activity (PA) levels have been affected. Although social restriction measures have currently become more flexible, workers’ lifestyles have negatively changed, which is a major health risk, especially for individuals with comorbidities and risk factors.

Precisely, inadequate PA levels are a determining factor in the development of diseases such as type 2 diabetes mellitus and arterial hypertension, which in turn are risk factors for COVID-19. In this sense, organizations such as the World Health Organization and the Australian Institute of Sport made recommendations for home-based exercises, although they should be more detailed. With the aim of providing information on the structure of training programs and the available mobile applications (apps), a literature review and a synthesis of the available apps were conducted considering the components below.
I. COMPONENTS OF PHYSICAL TRAINING

When making recommendations on PA and exercises, it is essential to consider their structure, especially in individuals with no expertise. We propose to adopt physical exercises whose execution includes three components, which are described below with regard to their frequency, intensity, and type.

Aerobic training: It consists of oxygen-consuming activities and is mainly aimed at large muscle groups, requiring continuous rhythm, guidance, and direction. The American College of Sports Medicine (ACSM) recommends aerobic activities focusing on three groups of individuals. Healthy adults aged 18-65 years should perform ≥150 min of moderate PA per week, i.e., 30 min/day, at least 75 min/week of vigorous activity, or a combination of both, distributed in 3-5 days. It is suggested that beginners and sedentary adults should progressively reach the above exercise duration, starting with 20 min/day. For those with health conditions or comorbidities, they should advance to higher levels of PA at 10 min-intervals until reaching the minimum 30 min of PA per day.1

Strengthening training: Aerobic activities should be supplemented with muscle strengthening exercises at least twice a week, performed at short periods and with a progressive increase of 2, 5, 10 and 20 min. Among the several exercise models, the most appropriate during the pandemic is training with elastic bands, due to their low cost and their adaptability to small spaces. Therefore, exercises such as squats, push-ups, unassisted sit-to-stand, or stair step-ups using resistance bands are easily adoptable. Moreover, it is proposed to initiate with series of 10 repetitions and progressively increase to series of 15-20 repetitions.2

Stretching training: Stretching is essential before and after aerobic and strengthening activities. Studies have demonstrated the usefulness of stretching in preventing joint injuries and in maintaining and improving muscle elasticity. Stretching exercises are characterized by causing sustained tension in the muscle, usually at the end of its range of motion, and should be performed in cycles of 10 repetitions (each lasting 10-15 s), with a 60-90 s interval between each cycle. The suggested frequency is three times a day, and exercises should be performed in a slow fashion as per individual tolerance, without causing pain.3,4

II. USE OF MOBILE APPLICATIONS

Technology provides access to different sources of information. Increased use of smartphones may become an ally when one needs to adopt a training habit. However, it is possible to find not only recommendations through videos, but apps are also a useful strategy to maintain PA, especially considering motivational and educational components that simulate interaction, creating social feedback and a mentoring or coaching bond.3,4 Furthermore, the process of gamification (levels, goals) results in an acceptable strategy to improve adherence to AP practice.5

Currently, there are several PA apps, which need to be assessed according to the following basic components: aerobic training, strength training, and stretch training. Additionally, some features, such as operational system and access, are supplementary components in the selection of the most appropriate app (Table 1).

In times of pandemic, maintaining an appropriate PA level is a challenge, especially for individuals who work from home. Therefore, it is necessary to provide guided and structured information, particularly to the inexperienced population, in order to prevent injuries and care for their health state; additionally, the implementation of apps as tools for PA practice represents an accessible and innovative phenomenon in the context where we live.
Table 1. Features of physical activity applications available for smartphones

| Application          | Description                                                                 | AT | ST | STT | Operational system | Cost                          |
|----------------------|-----------------------------------------------------------------------------|----|----|-----|--------------------|-------------------------------|
| Seven*               | Offers training levels, challenges, and 30-day plans, all                   | +  | +  | -   | IOS, Android       | Free                          |
|                      | having a 7-min duration. Shows how to execute the exercises, strength       |     |     |     |                    |                               |
|                      | training divided by body segments, in addition to a progress tracker        |     |     |     |                    |                               |
|                      | calendar.                                                                   |     |     |     |                    |                               |
| Freeletics Training Coach* | Schedules challenges per weeks, presents instructions for the               | +  | +  | +   | IOS, Android       | Free/Subscription to access    |
|                      | techniques, provides progress reports, and its data feed the system        |     |     |     |                    | personalized exercises        |
|                      | algorithm so that it is updated as the user advances.                     |     |     |     |                    |                               |
| Keep*                | Offers programs by training levels, collects information on everyday       | ++ | ++ | ++  | IOS, Android       | Free                          |
|                      | activities to indicate the most appropriate program, in addition to         |     |     |     |                    |                               |
|                      | considerations for individuals with health conditions.                     |     |     |     |                    |                               |
| Ejercicios en Casa*  | Offers daily routines for the main muscle groups and by levels, is         | -  | +  | +   | Android            | Free/Subscription to access    |
|                      | designed for no-equipment workout.                                          |     |     |     |                    | more content                  |
| Sworkit*             | Present levels from basic to advanced according to user’s needs, offers    | ++ | ++ | ++  | IOS, Android       | Subscription                  |
|                      | an exercise library by body segment.                                       |     |     |     |                    |                               |
| Nike Training Club*  | Offers programs by muscle groups, from beginners to athletes, with and    | +++| +++| +++ | IOS, Android       | Free                          |
|                      | without using equipment. Includes a section with yoga exercises.           |     |     |     |                    |                               |
| FitBody*             | Presents information for older individuals and pregnant women, additional  | -  | ++ | ++  | Android            | Free                          |
|                      | material with videos providing guidance for home-based exercises.          |     |     |     |                    |                               |

AT: Aerobic training  
ST: Strength training  
STT: Stretching training  
 -: Absent or not detailed  
+: Present  
++: Present plus explanation  
+++: Present plus detailed explanation of the exercise and active voice guidance.

* Training does not start with stretching exercises, but the app includes workout templates that can be independently performed before starting exercise routine.

REFERENCES

1. Ferguson B. ACSM’s Guidelines for Exercise Testing and Prescription 9th Ed. 2014. J Can Chiropr Assoc. 2014;58(3):328.
2. Miguel H. The use of different models of physical exercises performed at home during the COVID-19 pandemic: positive and negative points. Int J Environ Res Public Health. 2020;17(18):6515.
3. Wilke J, Mohr L, Tenforde AS, Edouard P, Fossati C, González-Gross M, et al. Restricterces! Preferences regarding digital home training programs during confinements associated with the COVID-19 pandemic. Int J Environ Res Public Health. 2020;17(18):6515.
4. Yang Y, Koenigstorfer J. Determinants of physical activity maintenance during the COVID-19 pandemic: a focus on fitness apps. Transl Behav Med. 2020;10(4):835-42.
5. Hammami A, Harrabi B, Mohr M, Krstrup P. Physical activity and coronavirus disease 2019 (COVID-19): specific recommendations for home-based physical training. Manag Sport Leis. 2020.

Correspondence address: Liliana Cruz-Ausejo – Jr. Antonio Ochoa 143, Lima – 15311 – Peru – E-mail: rcruzausejo@gmail.com/ rcrua@ins.gob.pe