

## **The BASES Expert Statement on Physical Activity and Exercise During Covid-19 “Lockdowns” and “Restrictions”**

Produced on behalf of the British Association of Sport and Exercise Sciences by Dr Andy Smith FBASES, Prof Stuart Biddle FBASES and Prof Stephen Bird FBASES.

### **Introduction**

Exercise Science has a role in helping people be physically active (PA) during “lockdowns” and “restrictions” like the ones put in place in response to COVID-19. This statement is intended to guide professionals in the field of exercise and PA working during times of COVID-19 lockdowns and restrictions. The statement may also be of interest to sport and exercise scientists and the informed reader interested in the application of scientific principles to exercise under conditions of lockdown.

The statement aims to help Exercise Scientists learn the lessons from the COVID-19 lockdown in the UK and prepare for future eventualities that share the characteristics of: 1) people staying at home; 2) social distancing; and 3) the closure of schools, gyms and parks. The authors wrote this statement with the humility that comes from knowing more research is needed before definitive evidence-based practice and policy can be developed. However, we trust this work provides a base on which to build.

### **Lockdowns and the Chief Medical Officers’ (CMOs) guidance on PA**

During the COVID-19 lockdown the UK Government (2020):

1. Closed schools thereby suspending PE and school sport.
2. Closed leisure facilities including gyms thereby requiring thousands of people to perform their exercise in their homes or outdoors.
3. Introduced social distancing measures to keep people 2 m apart thereby making exercise a largely solitary experience.
4. Told people to stay at home whilst encouraging “one form of exercise a day, for example a run, walk, or cycle - alone or with members of your household.”
5. Told people to “stay local and use open spaces near to your home where possible – do not travel unnecessarily.”
6. Suggested that “if you have a garden, make use of the space for exercise and fresh air.”

Prior to this lockdown the UK’s CMOs updated their 2011 guidelines on physical activity (CMOs, 2019). The updated guidance noted that: 1) small increases in activity can improve health; 2) muscle strength is important for daily functioning especially later in life; 3) the importance for every age group engaging in a variety of activities; and 4) the emerging evidence showing the health benefits of high intensity interval exercise.

The challenge for the exercise professional is to enable individuals and communities to meet the CMOs’ guidance on PA whilst adhering to the requirements of lockdown. Two aspects on the CMOs’ guidance are helpful in this regard. First, the statement that, “there is no minimum amount of PA required to achieve some health benefits.” (p8). Secondly, “these new guidelines allow greater flexibility for how and when children and young people can achieve the recommended levels of PA across the week.” (p8).

## Key topics and evidence

The CMOs' (2019) guidance on physical activity includes a series of infographics, which include advice on the frequency, intensity, duration and mode of PA required by different age groups and special populations. These include infographics on children and young people (5-18 years) and for disabled adults. These are authoritative and peer-reviewed sources of advice on what type of exercise people should do, which we recommend readers access along with the full guidance they illustrate. In addition, the WHO (2020) has provided practical advice on how to stay active at home during the COVID-19 outbreak.

Below we consider what the evidence tells us about seven topics that we think raise important issues in relation to exercise and lockdowns.

- 1. Sedentary behaviour:** For many people, COVID-19 has created more sedentary lives. For example, those working from home, have lost any activity in their daily commute and incidental movement at work. Homes are largely set up for sedentary living. Research shows that sedentary behaviour (low energy sitting during waking hours) can be detrimental to health (Dempsey *et al.*, 2020). Evidence suggests that reductions in sedentary behaviour can be done by standing (for those able) or moving. The more sedentary time is replaced with greater movement, and at higher intensities, the better, although this may not always be possible. Therefore, standing instead of sitting may be a good first strategy. Being highly active, beyond current guidelines, can offset some of the health problems of otherwise sedentary lives, but the majority do not do this. The key advice is to sit less (for those able) and to move more.
- 2. Detraining:** If, as a result of lockdown, a regular exerciser reduces the amount of PA they normally undertake, the health benefits they had previously accumulated will begin to be lost. To maintain health and fitness or at least ameliorate any decline in habitual activities (e.g. cycling to work) stopped by lockdown it should be replaced with alternative activities.

The effects of 3 months' "detraining" has been reported to adversely affect cholesterol, glucose, blood pressure, aerobic fitness, and strength. It is likely that these changes would increase the risk of cardiovascular and metabolic diseases, as well as reducing physical capacity of the detrained individual. Some of these adverse changes are reported to commence within days or weeks of ceasing physical activity. For those who exercised regularly prior to detraining, the losses of many health and fitness outcomes during 3 months detraining are unlikely to fall to the levels associated with never having exercised (see Leitão *et al.* (2019) for a recent study in this area.)

- 3. Strategies to be active:** The desire to be PA during lockdowns is probably high in many people. Starting an exercise routine is likely to be driven by initial (extrinsic) motives for health, but maintenance of behaviour is more likely if people "enjoy" the activity and feel good doing it (intrinsic drivers). A strategy people can use to be active is to ask 3 questions:
  1. What do they want to do? What do they enjoy doing e.g. exercising indoors or being PA outdoors?
  2. When do they want to do it? E.g. be active sporadically throughout the day or in longer bouts of exercise?
  3. How can they schedule their activity and prompt the desired behaviour? E.g. use a phone to prompt and schedule exercise.

Habits are more likely if people create set times and contexts for exercise, and combine it with other goals, such as listening to music or having a conversation with a family member.

- 4. Older adults:** Elderly people (>80 yrs) appear to be particularly vulnerable to COVID-19 as well as other health issues. To maintain and enhance health and fitness during lockdowns they would benefit from an active lifestyle that includes aerobic activity and resistance training in line with the CMOs' (2019) age-specific guidelines.

Notably, all middle and older aged adults are prone to experience a loss of muscle mass, strength, power and cardiovascular fitness as they get older. Some of this is an inevitable consequence of ageing, but for many, a lack of activity, to which people may be particularly susceptible during lockdown, can exacerbate this phenomenon. A gradual loss of muscle mass means that in the elderly it can be so significant (sarcopenia) that the associated loss of strength and power can prevent the successful undertaking of “activities of daily living.” Regular resistance training can ameliorate or even reverse this loss and improve walking endurance, gait speed, static and dynamic balance, stair climbing and reduce the risk of falls. Effective resistance programmes should be undertaken by all middle aged, older and elderly adults to prevent, ameliorate and where possible reverse this loss. Muscle strengthening programs commonly prescribe 10-12 repetitions at >70% 1 repetition maximum 2-3 days per week, although other regimens have successfully used lower resistances of 30% 1RM but with higher repetitions (see Papa et al. (2017) for a comprehensive review).

5. **Adolescents:** The UK COVID-19 lockdown has had a significant impact on adolescents depriving them of direct contact with their social network, which is so important for this age group, and disrupting their education at a crucial time. Anecdotally the COVID-19 lockdown might have increased the amount of sedentary screen time for adolescents. This is often associated with poorer mental health, poorer cardio-metabolic health and a lower quality of life. Both the long-term effect of lockdowns on the future health of adolescents, and ways of motivating adolescents to exercise during lockdown, are important areas of future research.
6. **Mental health:** The COVID-19 lockdown has created pressure points that could affect mental health. Physical activity can relieve stress and anxiety, reduce depression and boost positive mood (Ekkekakis, 2013). Positive mental health benefits are evident from single sessions of physical activity, as well as longer term involvement. Support for this has been found across all ages and demographics, as well as for those with disabilities. For single sessions of exercise, positive affect is more likely during and immediately after exercise when the intensity is moderate-to-vigorous rather than “severe.”

Evidence is lacking matching the mode of PA with specific mental health outcomes. There are large individual differences and preferences for different activities. Typically, aerobic activity has been recommended, but evidence also shows the effectiveness of muscle strengthening activities. Any effects are likely to result from a combination of the physical activity, the psychosocial climate of the activity, the physical and social environment and personal preferences. A simple physical prescription is not possible, but one based on pleasure, vitality and meaning is recommended (Segar *et al.*, 2016).

7. **The negative impact of exercise:** Exercise during lockdowns has risks. A muscular skeletal injury might necessitate a trip to hospital putting an unnecessary burden on the health system. One way to mitigate this risk it is to start any new PA slowly and build up gently. For a small group of people, lockdown might be an environment in which “exercise addiction” and overtraining can occur as a result of anxiety and having time to fill. In the context of a COVID-19 lockdown, a serious consideration for those who over train may be the negative impact this can have on the immune system.

## Conclusions and recommendations

Research clearly shows that regular moderate intensity exercise, of the type, intensity and amount recommended for general health, benefits the immune system (Campbell & Turner, 2018). Therefore, most people, including older adults and the less fit, benefit from regular exercise (Romeo *et al.*, 2010). This research indicates that regular exercise may enhance the individual's capacity to fight many infections, but at this point there is no specific research on the effect of exercise on the immune system's response to COVID-19. It is important to stress that other factors such as nutrition, anxiety and sleep also influence the immune system. There is ongoing debate concerning the potential impact of much more extreme exercise, such as that frequently undertaken by elite athletes and military personnel, with some research suggesting that it may result in immunosuppression (Simpson *et al.*, 2020). Furthermore, whilst there is limited research on the risks of exercising with a virus and/or

fever, the overwhelming consensus is that exercising with these symptoms is not recommended and may result in serious health issues (Friman & Wesslén,2000).

So the evidence would suggest that during a COVID-19 lockdown: (1) if you are a regular exerciser then you should continue; (2) if you don't currently exercise or do so infrequently, you would benefit from increasing your exercise because it would benefit many aspects of your health; (3) if you are a regular exerciser then continue at moderate levels, but avoid doing too much extreme exercise; and (4) do not exercise if you have a fever or flu-like symptoms.

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