

## Physical Inactivity During the COVID-19 Pandemic

### Key Messages

- ※ For substantial health benefits, the World Health Organization (WHO) recommends adults to engage in at least two and a half hours of moderate-intensity physical activity or one hour and 15 minutes of vigorous-intensity physical activity every week. They should also limit the amount of time being sedentary and replace sedentary behaviours with physical activity of any intensity (including light-intensity physical activity).
- ※ Insufficient physical activity increases individuals' risk of developing major chronic non-communicable diseases such as hypertension, heart disease, stroke, type 2 diabetes, colorectal and breast cancers, as well as shortens life expectancy.
- ※ Physical inactivity is also a significant risk factor for severe coronavirus disease 2019 (COVID-19) outcomes. Those who were consistently inactive were about 2.3 times, 1.7 times and 2.5 times as likely to be hospitalised, admitted to intensive care unit and die from COVID-19 compared with those who were consistently meeting physical activity guidelines respectively. They also had 20% and 32% increased risk of hospitalisation and death due to COVID-19 than those who were doing some physical activity respectively.
- ※ Regular physical activity can boost the immune system, increase the potency of vaccinations and defend the body from infectious diseases. During the COVID-19 pandemic, members of the public are urged to make physical activity a “must do” habit. Even without going to fitness centres or outdoors, there are ways to overcome the common barriers to physical activity.
- ※ To encourage members of the public to stay physically active, the Department of Health produced and launched various exercise demonstration videos and TV Announcements in the Public Interest that can be viewed at Change for Health website at [www.change4health.gov.hk/en/resources/av\\_gallery/index.html](http://www.change4health.gov.hk/en/resources/av_gallery/index.html).



## Physical Inactivity During the COVID-19 Pandemic

In the wake of the coronavirus disease 2019 (COVID-19) pandemic, most governments across the world implement social distancing measures to limit the spread of infections that may affect people's lives and health-related behaviours, one of which is physical activity participation. For substantial health benefits, the World Health Organization (WHO) recommends adults to engage in at least two and a half hours of moderate-intensity physical activity (such as brisk walking) or one hour and 15 minutes of vigorous-intensity physical activity (such as jogging) every week. They should also limit the amount of time being sedentary and replace sedentary behaviours with physical activity of any intensity (including light-intensity physical activity such as light walking).<sup>1</sup> Although the strictness of social distancing measures varied from country to country or even region to region, studies found significant decreases in physical activity level with concurrent increases in sedentary behaviours compared to pre-pandemic levels.<sup>2</sup>

### Effects of COVID-19 Pandemic on Physical Activity

A study of 455 404 unique smart-phone users from 187 countries observed a rapid decrease in worldwide daily step count shortly after WHO's declaration of COVID-19 as a global pandemic. Within 10 days of the pandemic declaration, there was a 5.5% decrease in mean steps (287 steps); within 30 days, there was a 27.3% decrease in mean steps (1 432 steps).<sup>3</sup> Another multinational survey, which included over 13 500 persons aged 18 or above from 14 countries with registered cases of COVID-19 and active governmental restrictions limiting movement

and activity in public spaces, also showed that self-reported level of moderate-to-vigorous and vigorous physical activity declined by 41.0% and 42.2% compared to pre-restrictions respectively. Including light physical activity, 75.5% of participants self-reported decreases in overall physical activity during restrictions.<sup>4</sup>

In Hong Kong, a local study in April 2020 with 631 adults aged 18–35 found that more than half of the respondents (57.8%) did not engage in any vigorous physical activity during the COVID-19 pandemic. Overall, 72.3% of respondents reported that their physical activity level had decreased, with an average of 8.6 minutes/day spent on moderate-to-vigorous physical activity, 17.1 minutes/day on walking, and 9.4 hours/day on sedentary activities. Besides, less than one-third (29.6%) of respondents met the WHO recommended level of physical activity.<sup>5</sup>

### Health Risks of Physical Inactivity

It is well-documented that insufficient physical activity increases individuals' risk of developing major chronic non-communicable diseases (NCDs) such as hypertension, heart disease, stroke, type 2 diabetes, colorectal and breast cancers, as well as shortens life expectancy.<sup>6, 7</sup> Even brief periods of reduced ambulatory activity can be detrimental to health. In healthy, nonexercising young men, a study showed that reduction in daily steps from an average of about 10 000 to 1 400 for a 2-week period could lead to impaired insulin sensitivity, loss of leg lean mass and decreased cardiovascular fitness.<sup>8</sup>

Compared to people who are sufficiently active, those who are insufficiently active would have 20% to 30% increased risk of death.<sup>1</sup> Physical inactivity is also a significant risk factor for severe COVID-19 outcomes. A study with 48 440 adults in the U.S. with confirmed COVID-19 infection between January and October 2020 observed that those who were consistently inactive were about 2.3 times, 1.7 times and 2.5 times as likely to be hospitalised, admitted to intensive care unit and die from COVID-19 compared with those who were consistently meeting physical activity guidelines (i.e. having engaged in at least two and a half hours of moderate-to-vigorous physical activity per week) respectively. They also had 20% and 32% increased risk of hospitalisation and death due to COVID-19 than those who were doing some physical activity respectively.<sup>9</sup>

## **The Importance of Leading an Active Lifestyle**

The dual epidemics of chronic NCDs and COVID-19 accentuate the importance of physical activity. Apart from reducing the risk of developing various chronic NCDs,<sup>1</sup> regular physical activity can boost the immune system, increase the potency of vaccinations and defend the body from infectious diseases, including acute respiratory infections.<sup>10</sup> Thus, members of the public are urged to make physical activity a “must do” habit. Although remaining physically active may seem challenging during social distancing, it is still possible to exercise and have sufficient physical activity. During the COVID-19 pandemic, study found that the most frequently perceived barriers to physical activity

participation in adults included lack of energy or feeling fatigue, lack of motivation, lack of appropriate facilities/equipment or space, lack of time and lack of partner.<sup>11</sup> As shown in Table 1, however, there are ways to overcome these barriers even without going to fitness centres or outdoors.

People who prefer exercising outdoors should maintain an appropriate social distance with other people as far as possible and observe good personal hygiene. They are also urged to take necessary protective measures (such as drinking enough water, wearing loose and light-coloured clothing, applying adequate amount of broad-spectrum and water-resistant sunscreen lotion with a sun protection factor of 15 or above, avoiding over-exertion and prolonged activities, etc) to reduce the risk of dehydration, heat stroke and sunburn when exercising in very hot weather. It is noteworthy that COVID-19 vaccines can protect fully vaccinated people against the infection when exercising. Unless there is contraindication, members of the public with stable chronic conditions are urged to get vaccinated against COVID-19 to protect oneself, family, friends as well as the community.<sup>12, 13</sup> For more information about COVID-19 Vaccination Programme, please visit [www.covidvaccine.gov.hk/en](http://www.covidvaccine.gov.hk/en).

**Table 1: Countermeasures for common barriers to physical activity participation**

Barriers	Countermeasures
<b>Lack of energy or feeling tired</b>	<ul style="list-style-type: none"> <li>◇ Schedule physical activity during the time of day when you feel more energetic</li> <li>◇ Have regular meals and eat a healthy diet to help boost energy levels and fight fatigue</li> <li>◇ Start with small amount of exercise and build it up gradually with longer duration and greater intensity</li> </ul>
<b>Lack of motivation or company</b>	<ul style="list-style-type: none"> <li>◇ Use motivational tools, such as workout apps, pedometer or other wearable devices for monitoring the accumulation of daily steps and supporting us to achieve the daily step count target</li> <li>◇ Buddy up with friends or family members, text and send each other an “accomplishment emoji” when completed the daily workout with another exercise challenge</li> <li>◇ Join online exercise classes or dance lessons and exercise along with the instructors and other participants</li> <li>◇ Play active videogames, yet you should limit the time spent in front of a screen and be sure to maintain a balance between online and offline activities in your daily life</li> </ul>
<b>Lack of skills, facilities or equipment, or space</b>	<ul style="list-style-type: none"> <li>◇ Select activities that require minimal skills or facilities, such as walking</li> <li>◇ Use bottles containing about 500 ml of water, a 5 kg bag of rice or a heavy book as weights for bicep workouts; a sturdy stool or chair for step-up exercise; a towel for resistance training</li> <li>◇ Opt for home-based exercises that can be performed in limited space, such as squats, lunges, planks, push-ups or abdominal crunch sit-ups according to your own capacities</li> </ul>
<b>Lack of time</b>	<ul style="list-style-type: none"> <li>◇ Review your daily schedule and put aside 10, 15 or 20 minutes two or three times every day for physical activity</li> <li>◇ Do household chores as a means of exercise. Examples of moderate-intensity home activities include making beds and changing linens, scrubbing bathroom or bathtub, mopping or sweeping floor with some efforts<sup>14</sup></li> <li>◇ Incorporate physical activity, small walks or stand-ups into daily routines, such as taking stairs instead of elevator or stepping on the spot while watching television; pacing around while talking on the phone; standing up while folding laundry, ironing or performing other sit-down tasks</li> </ul>



To encourage members of the public to stay physically active, the Department of Health produced and launched a number of exercise demonstration videos and TV Announcements in the Public Interest that can be viewed at Change for Health website at [www.change4health.gov.hk/en/resources/av\\_gallery/index.html](http://www.change4health.gov.hk/en/resources/av_gallery/index.html). Together, let's keep healthy, get vaccinated and fight the virus!



## References

1. Physical Activity. Geneva: World Health Organization, 26 November 2020. Available at [www.who.int/news-room/fact-sheets/detail/physical-activity](http://www.who.int/news-room/fact-sheets/detail/physical-activity).
2. Stockwell S, Trott M, Tully M, et al. Changes in physical activity and sedentary behaviours from before to during the COVID-19 pandemic lockdown: a systematic review. *BMJ Open Sport & Exercise Medicine* 2021;7(e000960):doi:10.1136/bmjsem-2020-000960.
3. Tison GH, Avram R, Kuhar P, et al. Worldwide effect of COVID-19 on physical activity: A descriptive study. *Annals of Internal Medicine* 2020;173(9): 767-770.
4. Wilke J, Mohr L, Tenforde AS, et al. A pandemic within the pandemic? Physical activity levels substantially decreased in countries affected by COVID-19. *International Journal of Environmental Research and Public Health* 2021;18(5).
5. Zheng C, Huang WY, Sheridan S, et al. COVID-19 pandemic brings a sedentary lifestyle in young adults: A cross-sectional and longitudinal study. *International Journal of Environmental Research and Public Health* 2020;17(17).
6. Booth FW, Roberts CK, Thyfault JP, et al. Role of inactivity in chronic diseases: Evolutionary insight and pathophysiological mechanisms. *Physiological Reviews* 2017;97(4):1351-1402.
7. Lee IM, Shiroma EJ, Lobelo F, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 2012;380(9838):219-229.
8. Krogh-Madsen R, Thyfault JP, Broholm C, et al. A 2-wk reduction of ambulatory activity attenuates peripheral insulin sensitivity. *Journal of Applied Physiology* 2010;108(5):1034-1040.
9. Sallis R, Young DR, Tartof SY, et al. Physical inactivity is associated with a higher risk for severe COVID-19 outcomes: a study in 48 440 adult patients. *British Journal of Sports Medicine* 2021; Apr 13:bjsports-2021-104080.
10. Chastin SFM, Abaraogu U, Bourgois JG, et al. Effects of regular physical activity on the immune system, vaccination and risk of community-acquired infectious disease in the general population: systematic review and meta-analysis. *Sports Medicine* 2021:1-14.
11. Farah BQ, do Prado WL, Malik N, et al. Barriers to physical activity during the COVID-19 pandemic in adults: a cross-sectional study. *Sport Sciences for Health* 2021:1-7.
12. Scientific Committee on Emerging and Zoonotic Diseases and Scientific Committee on Vaccine Preventable Diseases. Consensus Interim Recommendations on the Use of COVID-19 Vaccines in Hong Kong (As of 9 June 2021). Hong Kong SAR: Centre for Health Protection, Department of Health, June 2021. Available at [www.chp.gov.hk/en/static/24005.html](http://www.chp.gov.hk/en/static/24005.html).
13. A Concise Guide for Individuals with Chronic Diseases: Can I Have COVID-19 Vaccination. Hong Kong SAR: Department of Health. Available at [www.covidvaccine.gov.hk/pdf/Guidance\\_Examples\\_of\\_Chronic\\_Diseases\\_en.pdf](http://www.covidvaccine.gov.hk/pdf/Guidance_Examples_of_Chronic_Diseases_en.pdf).
14. Ainsworth BE, Haskell WL, Herrmann SD, et al. The Compendium of Physical Activities Tracking Guide. Available at <https://sites.google.com/site/compendiumofphysicalactivities/home>.



## Home Exercise Videos 家居運動短片

To prevent obesity and chronic diseases among members of the public and encourage them to do physical activity at home amid the COVID-19 pandemic, the Department of Health has produced a series of Home Exercise Videos and launched on YouTube Channel since July 2021.

Two of the Home Exercise Videos target at families. In “[Family Workout – Take up the Challenges](#)”, the couple competes in physical activity challenges with their son at home, while in “[Family Workout – Discover the Olympics](#)”, the family of three have fun in the Chan’s Family Olympics at home.

The other two Home Exercise Videos target at young adults. In “[Youth Workout – Selfie Impossible](#)”, three siblings have fun taking selfies while doing physical activities at home. In “[Youth Workout – Travel Fantasies](#)”, the three siblings encourage everyone to do physical activities at home and train well before travel.

Please scan the following QR codes to watch the videos:

“ <a href="#">Family Workout – Take up the Challenges</a> ”	
“ <a href="#">Family Workout – Discover the Olympics</a> ”	
“ <a href="#">Youth Workout – Selfie Impossible</a> ”	
“ <a href="#">Youth Workout – Travel Fantasies</a> ”	



The Leisure and Cultural Services Department (LCSD) launched a new phase of “Online Interactive Sports Training Programmes”.

The “Online Interactive Sports Training Programmes” are conducted by coaches through an online platform in real time, enabling participants to learn interactively and practise physical activities at home, and to establish a healthy lifestyle. Various types of programmes will be offered. They include aerobic dance, fitness exercise, body-mind stretch, parent-child fitness, tai chi, fitness yoga and hip hop dance. The courses are designed by relevant national sports associations and are suitable for people of all ages.

Participants can join the online courses at home by using their desktop, tablet computers or mobile phones, with Zoom software downloaded in advance. Both daytime and nighttime courses will be held, with each course consisting of two or three one-hour sessions.

Members of the public can enrol on a first-come, first-served basis starting from 8:30am on the first day of enrolment through Leisure Link Internet Booking service ([leisurelink.lcsd.gov.hk](http://leisurelink.lcsd.gov.hk)). The course fee is \$20. Please visit the LCSD website ([www.lcsd.gov.hk/en/visavis](http://www.lcsd.gov.hk/en/visavis)) or call 2414 5555 for details.

The “Online Interactive Sports Training Programmes” are part of the interactive “vis-a-vis +01” series under the LCSD Edutainment Channel ([www.lcsd.gov.hk/en/edutainment-channel.html](http://www.lcsd.gov.hk/en/edutainment-channel.html)) which promote leisure and culture through a one-stop online platform covering informative and learning materials.

**Non-Communicable Diseases (NCD) WATCH** is dedicated to promote public’s awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to [so\\_dp3@dh.gov.hk](mailto:so_dp3@dh.gov.hk).

### Editor-in-Chief

Dr Rita HO

### Members

Dr Patrick CHONG	Dr Ruby LEE
Dr Thomas CHUNG	Dr WK LI
Dr Cecilia FAN	Dr YC LO
Dr Raymond HO	Dr Lilian WAN
Mr Kenneth LAM	