

## Coronavirus Pandemic

# Sustainable health promotion for the seniors during COVID-19 outbreak: a lesson from Tokyo

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### Abstract

The COVID-19 pandemic is novel corona virus infection outbreak that has gone global in 2020. Current prevention policies consist of hand hygiene and social distancing. Emergencies overloaded health services and shocked the logistics chains in many countries, especially Italy and China. Having more than a quarter of its population being elderly, Japan is at high risk for COVID-19 induced morbidity and mortality.

This situation cancelled schedules of all routine group exercise activities for the seniors in Japan. While the outbreak is ongoing, staying at home is safe. However, successive days of being house-ridden and limited movement can lead to excessive physical inactivity. Some elderly who are not moving much can lose a significant amount of muscle strength, flexibility and aerobic capacity. It can accelerate the frailty and dependency of the seniors, and subsequently, claiming of care and health services. Moreover, existing and new evidences showed that physical activity can promote antiviral immunity.

An alternative to usual group exercise activities is crucial to keep seniors active without affecting social distancing. While staying at home for long, functional exercises maintaining basic level of physical activity and movements are urgently required to be introduced to the seniors in Tokyo and around the world to prevent functional decline.

Home exercise is a practical option. Therefore, we made a home-version of the functional training exercise video with different sets of 10-minutes exercise for 7 days a week. This breakthrough alternative may sustain health promotion for the elderly persons to preserve their active aging and maintain optimal health.

**Key words:** pandemic; Japan; aging; telehealth; public health; care prevention.

*J Infect Dev Ctries* 2020; 14(4):328-331. doi:10.3855/jidc.12684

(Received 19 March 2020 – Accepted 25 April 2020)

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### Introduction

The COVID-19 pandemic has impacted health and quality of life in many ways. One of the hardest hit areas is health promotion.

Group exercise and social activities are common events for elderly community residents in Tokyo and cities across Japan [1]. Municipalities, stakeholders in the communities, and service providers of primary health care altogether create an opportunity for healthy lifestyle behaviors and care prevention, preserving autonomy and enriching social bonds. Through these events of community-based social innovation, active aging and health promotion were sustained in Japan in the last two decades. Many of such events are to be suspended in response to prevent the transmission of COVID-19 from one cluster of patients to another cluster of people [2].

In the early 2020, the novel corona virus originated in Wuhan, China and spread to many countries across the globe [3]. Japan was not spared in global COVID-19 outbreak. In February 2020, Japan shortly ranked as the second highest in the number of COVID-19 cases, after the Diamond Princess cruise ship docked in Japan at the Yokohama port [4]. Even before the declaration of pandemic, by WHO, the Japanese Government and public health authorities tried to stop transmission of the novel corona virus. Schools were closed in early March 2020, social distancing became an important intervention, and movements of people were to be reduced drastically [2,4]. Some countries like Italy and French even practiced to lock-down their cities.

*Impact of pandemic and social distancing on aging populations and health promotion*

Elderly persons are at high risk of corona virus infection, morbidity, serious complications, and mortality. The data reported in highly affected counties such as China and Italy are highlighting the same point [5,6]. The proportion of seniors aged 65 years and older in Japan’s population is 28 %, which is higher than that of Italy and China [7]. Japan with its super aging society is at very high risk of severe morbidity and potential shocks in the medical care supply chain. Therefore, even though being a practice for health promotion, all such group activities are to be stopped in Tokyo, in order to prevent COVID-19 transmission. Seniors in Tokyo suddenly face a situation difficult for them to meet their peers, friends and to sustain social life. However, it is very important to continue health promotion practices which target care prevention such as functional training exercise. We aimed to carry on with the regular exercise activities of senior citizens while staying home by applying telehealth as a breakthrough strategy.

**Methodology**

An asynchronous video was applied as telehealth 2.0 tool for health promotion to reach to the community residents [8,9]. An alternative to usual group exercise is required to keep elderly seniors active and move around without affecting social distancing. While they are staying at home for many days, to prevent COVID-19 transmission, a set of exercises maintaining basic level of physical activity and movements to enhance the functionality, is urgently required for seniors in Tokyo and around the world. Therefore, home version exercise is a practical option. Thus, we made a home version of the functional training exercise video for the elderly.

The requirements for home exercise implementation are very simple: (1) video or a poster to guide the exercise, (2) information and communication to inform the people that they can still have a chance to do functional training exercise at home, and (3) a calendar to record daily. Videos can be distributed

through the service provider website which allows registered downloads.

Seniors who use mobile phones or tablets can download the home exercise video to their devices. Those who are not familiar with mobile devices can be reached by delivering DVDs and posters at primary health care service facilities.

Public health professionals from Juntendo University and the collaborating team of community integrated intermediary care (CIIC) project, contributed to the home exercise set of the functional training video. Stakeholders and academics discussed how to reach out to the elderly customers, who are registered members at the primary health care services in the community.

**Results**

Before the Tokyo metropolitan government called for cooperation of its residents to practice social distancing measures, the home version exercise video was delivered to the seniors living in the community in early April 2020. A short video script was posted on the webpage of the primary health care service provider. The link is in the reference [10]. Members who registered for the service can download the whole set of videos for seven days through registered access. Moreover, an exercise poster and a calendar to self-record the activity were provided to the seniors.

Components of home version exercises are stretching, squatting, and strengthening exercises for arms, legs, and trunk. A 10 minutes’ session will comprise training each component 10 times. (Table 1) These set of exercises are designed to maintain strength and flexibility while preserving safety and promoting autonomy and motivation. The home exercise only requires a stable armless chair and a 300ml-500ml PET water bottle to practice arm strength. It is recommended to do home exercise three times a day. (Table1)

By doing 10 minutes of functional training 3 times a day, the elderly persons can achieve the physical activity level of more than 150 minutes per week, which the World Health Organization recommended as a minimal requirement for persons aged 65 years and

**Table 1.** Design, schedule and components of home exercise for the seniors to practice during staying home for COVID-19 containment.

Days	Care prevention exercise components					Duration	Recommended frequency
Monday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day
Tuesday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day
Wednesday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day
Thursday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day
Friday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day
Saturday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day
Sunday	Stretch	Squat	Upper limbs	Lower limbs	Trunk	10 minutes	3 times/day

Exercise for upper limbs and lower limbs will include both right and left sides. There is video clip in reference number 10.

older [11]. Regular community-based social and physical activity was sustained through the digital health initiative during the period of mandatory social distancing practice to contain COVID-19 pandemic.

## Discussion

Primarily, functional training aimed to prevent the care needs and promote activeness and independence of the seniors. Care prevention exercises are common practices in Japan. Many of the Japanese municipalities invested to develop age-friendly environments. One of those actions was community exercise for the elderly citizens to prevent functional decline and fall, and to keep them functionally active as they are getting older. During the COVID-19 outbreak, the group exercise is to be stopped, so it should be urgently replaced with home exercise for sustaining care prevention and health promotion.

While the outbreak is ongoing, staying at home is safe. However, successive days of being house-ridden and having limited movement can be very monotonous. Cold temperature due to the slowing-ending winter and nasty weather can bring feelings of isolation and depression. Some elderly persons who are not moving much can lose a significant amount of muscle strength, flexibility and aerobic capacity [12,13]. It can affect daily functioning and increase the risk of fall [14]. Moreover, several studies had shown that exercise, especially moderate ones, can act as a counter measure to immune senescence or age-associated immune deficiency [15]. Recent proteomic study reported that orchestral immune response and mitochondrial antiviral response can be enhanced by physical activity [16]. These evidences collectively highlight prevention of frailty and better immunity as merits of exercise.

The impact of COVID-19 outbreak is estimated to affect every sector of society. It is going global. Health care utilization and economic loss is unprecedented. Furthermore, limited choice of food and activity during lockdowns and tough times may worsen non-communicable diseases and increase demand for care needs among the seniors. Subsequently, it can accelerate the frailty of the elderly, leading to overutilization of health care, long-term care, and their costs. The home exercise video will help the elderly practice healthy behaviors at home, preventing such negative aftermaths [17].

## Conclusion

The control of COVID-19 transmission and saving lives during the pandemic are critically important. Likewise, foreseeable long-term consequences such as

frailty crisis are to be prevented carefully. Therefore, it is important to sustain the ongoing health promotion activities by applying the breakthrough alternatives such as home version care prevention exercise for the seniors. The lessons we learnt in Tokyo about applying telehealth solutions to sustain active aging during home stay would be sharable to other cities across the world.

## Acknowledgements

We acknowledge the members of seniors' exercise clubs in Tokyo, Japan and Chiang Mai, Thailand.

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**Conflict of interests:** No conflict of interests is declared.