**Supplementary Materials**

***Original COVID-19 questionnaire***

Questions Q2–Q5 inquired about compliance with behavioral changes against COVID-19 infection, and responses were given using four-point Likert scales. For example, for Q2 (“To what extent have you complied with unnecessary and nonurgent outing restrictions during the last 3 months?”, the participants were asked to choose a response from the following four choices: “Remarkably reduced”, “Slightly reduced”, “No change”, and “Increased”.

Questions Q6–Q9 inquired about changes in mental and physical conditions during the period of restricted voluntarily circle activities, and responses were given using four-point Likert scales. For example, for Q6 (“How has your mood changed during the period of restricted voluntarily circle activities for the last 3.5 months?”), the participants were asked to choose a response from the following four choices: “Remarkable decline”, “Slight decline, “No change”, and “Improved”.

Questions Q10 and Q11 inquired about the frequency of home self-care for frailty prevention during the period of restricted voluntarily circle activities, and responses were given using four-point Likert scales. For instance, for Q10 (“How often did you exercise at home (simple exercises or walking in the neighborhood) during the restriction period?”), the participants were asked to choose a response from the following four choices: “Almost every day”, “3–4 times a week”, “1–2 times a week”, and “Never”.

***Statistical analysis***

The covariates selected were basic attributes, behavioral changes against COVID-19 infection, physical/mental condition, frequency of home exercise, and frequency of telephone communication. When inputting an independent variable as a covariate, frailty status was divided into a “frail” group (frail and pre-frail) and a “non-frail” group (robust). In addition, behavioral changes against COVID-19 infection were divided into a “good compliance” group and a “noncompliance” group. For instance, the responses “Remarkable” and “Slight” or “Always” and “Almost always” were classified into the good compliance group, whereas “No change” and other responses were classified into the noncompliance group. Frequency of exercise at home and telephone communication during the restriction period were divided into two groups as follows. Regarding exercise frequency, “Almost every day” and “3–4 times a week” were classified into the “good exercise” group, whereas others were classified into the “poor exercise” group. Regarding telephone communication, “Almost every day” and “At least once a week” were classified into the “good telephone communication group”, whereas others were classified into the “poor telephone communication” group.

The most appropriate model was selected using the stepwise method with p values of 0.05 for entry and 0.1 for removal. Starting from a model that included all basic attributes (i.e., age, sex, BMI, family structure, and frailty status), three physical/mental condition groups (i.e., physical fatigue, appetite, and sleep quality), all behavioral changes against COVID-19 infection (i.e., restrictions on going out, maintaining physical distance, wearing a face mask, and handwashing) and the compliance, exercise, and telephone communication groups, the final model was selected using the stepwise reduction method. Variables from the worsening depression group (physical fatigue, appetite, and sleep quality), the good compliance group (in terms of restrictions on going out), and the poor exercise group were included in the final model.

**Supplementary Table 1.** Changes in mental/physical condition due to restrictions on participating in voluntarily circle activities over 3.5 months in community-dwelling older adults

|  |  |  |  |
| --- | --- | --- | --- |
| Item |  | n | % |
| Changes in mental/physical condition |  |  |  |
| Physical fatigue | Remarkable decline | 24 | 18.9 |
|  | Slight decline | 49 | 38.6 |
|  | No change | 53 | 41.7 |
|  | Improved | 1 | 0.8 |
| Depression | Remarkable decline | 9 | 7.1 |
|  | Slight decline | 42 | 33.1 |
|  | No change | 76 | 59.8 |
|  | Improved | 0 | 0 |
| Appetite | Remarkable decline | 4 | 3.1 |
|  | Slight decline | 21 | 16.5 |
|  | No change | 98 | 77.2 |
|  | Improved | 4 | 3.1 |
| Sleep quality | Remarkable decline | 4 | 3.1 |
|  | Slight decline | 32 | 25.2 |
|  | No change | 91 | 71.7 |
|  | Improved | 0 | 0 |