chronic diseases reportedly increase functional outcomes, raise exercise tolerance, lower hospitalization rates, improve the quality of life [7]. erefore, selecting and or developing appropriate exercise programs designed to lessen deteriorating health conditions would help reduce illness and improve health.

A revised version of the health-promotion law was put into place in 2002. It included a strong demand for health-promotion policies by each prefecture and conscious e ort toward implementing local policies by every city citation. Further, a new national policy for the prevention and treatment of metabolic syndrome was introduced by e Japanese Ministry of Health Labour and Welfare since 2013 residents who do not meet preventive criteria for the syndrome have been charged a penalty by the National Federation of Health Insurance Societies citation. e economic pressure created by this policy seems to have resulted in increased health education at national, prefectural, and civic level [2].

To implement this policy, various forms of health education for the improvement of metabolic syndrome have been presented in each city in Japan. However, it has been reported that program contents di er from city to city. Among these programs the city of Matsumoto o ered local residents an active two-year health program developed by the Japanese authors. is program measured energy expenditure with a pedometer, monitored the e ects of exercise with anthropometry, blood pressure, brain function tests, physical tness tests and blood tests, and provided monthly educational seminars and 2 hour weight training once a week. is research focused on the city of Matsumoto because Nagano prefecture, where Matsumoto has had one of Japanese highest longevity rates over the last few decades. Since Japan had the world's highest longevity rate in 2005, Matsumoto is expected to continue to be an area with one of the world's highest longevity rates [8].

As supported by the literature, health programs are bene cial

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Blood chemistry test

Blood sample was taken a er fasting in order to measure blood sugar levels of each participant between levels and under the supervision of a doctor, the before nurses collected blood and tested for total cholesterol, HDL (high-density lipoprotein), LDL (low-density lipoprotein), neutral fat, uric acid and blood sugar.

Blood pressure assessment

Maximum blood pressure and minimum blood pressure were measured by auscultation (mercury sphygmomanometer, Kenzumedico 0601B001, Japan) a er the participant's had been sitting for 15 minutes in a room with an ambient temperature of 25°C and relative humidity of approximately 50%.

Date analysis and management

Paired t-test was used to compare results for before and a er participation in each year of the health program. A two-way repeated measured ANOVA was used to assess di erences between the rst and the second years and value of before and a er each test. e number of steps walked for the rst and second years was compared using Student t-test. Test for signi cance was set at $p<0.05$. Statistical analyses were performed using SPSS Statistical Packages (SPSS 4.0.1 Inc., Chicago, USA).

Ethics protocol

e physical tness tests for 65 to 79 olds were approved by the Japanese Ministry of Education, Culture, Sports, Science and Technology. No subjects had a history of neurological, major medical, or physical disorders, at the time of the study. Prior to participating in the experiment, all subjects gave their written informed consent. is study was approved by the Ethics Committee of the School of Medicine, Shinshu University, Japan.

Results

Participants pedometer assessment

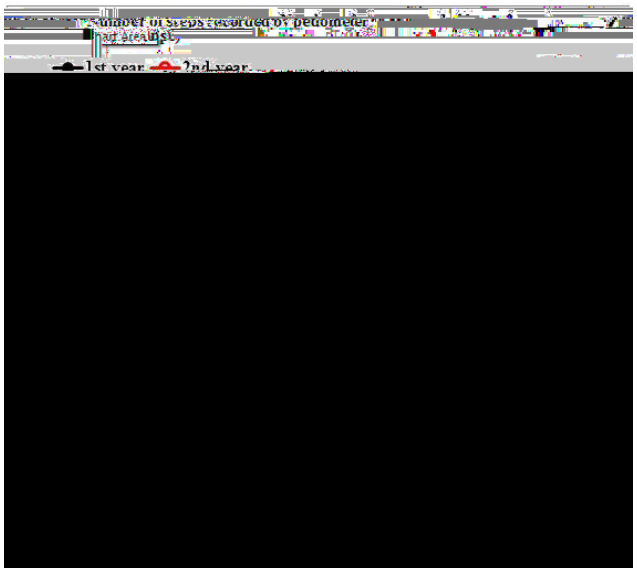

Figure 1: Monthly average steps of participants. Black point is 1st year and red point is 2nd year.

Figure 1 shows the average steps walked for each month. A comparison of the average number of steps from the rst year to second year, the second year became signi cantly more steps than the rst year

Month	1st year	2nd year
April	Opening Ceremony	Opening Ceremony
May	Measurements and tests and a lecture about the exercising for good health	Practical skills of circuit training
June	practical skills for stretching and recreation	Practical skills on muscle strength training
July	A lecture about blood pressure and camping	Hiking on the mountain
August	A lecture on personal computers and practical aerobic skills	Lecture on the nutrition
September	Natural observation of the mountains	Practical skills of new sports
October	practical skills of tennis or golf	The practical skill of right walking
November	Practical skills on coordination training	The practical skill of walking together
December	Practical skills of Tai chi chuan	Lecture on prevention of heart attacks and strokes
January	3 U D F W L F D O V N L O O H[ercise	The practical skill of V V recreation
February	Lecture on the brain and exercise, and various measurements and tests	The practical skill of skill walk
March	Closing ceremony	Closing ceremony

Table 1: & R Q W H Q W V R I S U R J U D P R I W K H ¿ U V W \ H D U

p<0.001), the 10-meter obstacle course (before: 5.1 sec ± 0.1, a er: 4.
sec ± 1.1, p<0.001), and the 6-minute walk (before: 637.4 m ± 5.3, a er:
716.6 m ± 9.8, p<0.001).

Blood chemistry test

and January. e blood chemistry test and other tests are known to be in uenced by seasonal variations. In the future it will be necessary to set tests at the same time when seasonal variations do not occur.

In the second year there were signi cant improvement in weight, BMI in anthropometry, sit and reach exibility and eyes open single leg stance in the physical tness test, uric acid in blood, and the number of errors in the go/no-go tasks. e improvements above may have been due to: the increase in the number of steps in walking (about 600 steps) and the introduction of two- hour a week weight training. ese results suggested the importance of appropriate quantity and continuation of exercise.

Conclusion

Conclusively the energy expenditure with pedometers, anthropometry, blood pressure, the brain function, physical tness and blood chemistry tests were conducted before and a er each year of the program to assess its interim e ectiveness. A comparison of the average number of steps from the rst year to the second year shows that the second year had signi cantly more steps. Although the anthropometry and blood pressure signi cantly improvedfor two years, there was a tendency for an increase in the girth of the abdomen. e brain function average reaction times for the go/no-go task had become faster and error rates had signi cantly decreased by the end of the second year in comparison to the rst year. For the physical tness tests, ve of the 6 components signi cantly improved a er the program. Although value of the handgrip strength was not decreased, we must think about an enlightenment program of the muscular strength from now on. Blood chemistry test HDL and uric acid levels improved signi cantly between the end of the rst year and the end of the second year. However, the total cholesterol, natural fat and blood sugar results from the rst year to the second year program showed not signi cant improvement. We must think about an enlightenment program to include nutrition from now on.

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