

2. HEALTH AND LIFE EXPECTANCY SURVEY OF HIGH DAN-HOLDING JUDOISTS

Hideaki NAKASHIMA (Wayo Women's University), Tatsuo SASA (Kudanzaka Hospital), Yukio HASHIBA (Kanazawa Iryo-gijutsu Junior College), Shinkich OGAWA (Yokohama National University)

The average life span of the Japanese has lengthened every year. According to the Mortality Table by the Ministry of Health and Welfare in 1979,¹³⁾ the expectation of life for a man is 73.46 years and for a woman it is 78.89 years. Though the figures showed a slight decrease in the Summary Life Table of 1980,¹⁴⁾ Japan has ranked first among the nations in the matter of longevity these several years. There are more than 1,000 people who are over 100 years old in Japan.

Everybody wishes to enjoy longevity, but every one cannot expect it because health and long life can only be attained by the influence of several elements, such as genetic factors, nutrition and living conditions. Indeed, we can enjoy good health and longevity by making efforts to take well-balanced nutrition and moderate exercise and to get rid of stress. The physical activity is necessary to keep our health.

Many of the researches on the mortality of the sports players (especially on oarsmen) have shown that the excessive sport activity in the young days does not always have influence on their longevity and that many sportsmen are blessed with longevity. In the case of some sports, however, the overweight causes metabolic disorder which has often led to the high death rate.

In the case of the sports which requires greater absolute muscle strength and heavier weight, bigger players will be selected, and gradually in the course of training and selection those with adequate physiques will have the majority. Judo is a popular sports in Japan. As we can guess from the weight classification system in Judo, those with greater absolute muscle strength are more advantageous, unless there is an overwhelming difference in the skill. To apply Judo players physique to the Sheldon's Triagonal Chart of Somatotype, it can be said that they belong to the mesomorphy type (fighter type) with well-developed muscles. There are many Judoists continuing to play Judo till quite an old age, which is a rare case among other sports. The high-dan holders have been practicing Judo for a long time and even after the retirement from tournaments they can still make some contribution to Judo. Therefore, the condition of their health, exercise plan, and drinking and smoking habits could be an important guide to the ordinary people who want to be in good health. This is the report of the survey of ex-Judoists on their health, exercise, drinking and smoking habits, and mortality. The survey was made by the questionnaire and studied with comparison to the ordinary people.

I. The Subjects and Method of the Survey

A. The First Survey

The subjects were chosen from *High-dan Holders* (over 6-dan) *Membership List of Kodokan* (1968), and divided into four age groups. The subjects in group A were born between 1927 and 1929. They were around 40 years old when the Membership List was issued in 1968 and around 51 years old when the survey was made in 1979. The subjects in group B were born between 1917 and 1919, who were around 60 years old at the survey period. The subjects in group C were born between 1907 and 1909, who were around 72 years old. The subjects in group D were born between 1897 and 1899,

who were around 82.

The survey was made by sending the questionnaire by mail as shown in Table 1. For the deceased we asked their families to answer. For those returned to the sender because of unidentified address and those without reply, we checked up with the local Judo Leagues or the high dan holders residing near by. We also had the home-coming students confirm them at each local authorities. In this way the efforts were made in order to survey on as many subjects as possible.

Table 1 The First Survey Sheet

Judoists' Health and Life Survey Sheet

Name:

Date of Birth:

○Questions concerning Judo

—the age started to practice Judo

—the highest dan at school period

—the term of special training

—development after graduation

the final dan:

the year of receipt:

—the age quitted Judo

—in the case of still continuing Judo

frequency of practice (per week, per month):

hours:

○Questions concerning physique

—height at student period

—body weight at student period

—body weight at the age of 30-40

—body weight at the age of 50

○Present health condition

1. very good 2. good 3. average 4. not so well 5. invalid

The ones who circles 4 or 5 should describe the name of illness and the symptoms.

○Medical history

1. nothing 2. heart disease 3. respiratory disease 4. digestive disease

5. kidney disease 6. hypertension 7. diabetes 8. gout

9. arthropathia 10. others

○Exercise other than Judo

1. practicing

the name of sport activity:

periodically:

per week

per month

minutes each time:

not-regularly:

times per year

2. not practicing

○Exercise Judo practiced in the past

age:

name of activity:

period:

○Present job

1. agriculture, forestry, fishery 2. manual labor 3. sales, service

4. office work 5. executive, management 6. none 7. others (Please describe)

○Drinking and smoking habits

Drinking:

drink: 1. sake (Japanese wine) 2. whisky 3. beer

quantity: 1. heavy 2. average 3. little

frequency: 1. almost every day 2. 1-2 times a week

3. seldom (only occasionally)

used to drink but not any more:

period: age _____ to _____

years after quitting:

do not drink:

Smoking: smoke: 1. cigarette 2. cigar 3. pipe tobacco
 quantity (per day, the number of cigarette)
 1. over 20 2. 10-20 3. less than 10
 used to smoke but not any more:
 period: age _____ to _____
 years after quitting smoking
 do not smoke:

The Deceased (entered by the family)

○Date of death:

○Cause of death: 1. death in the war 2. civilian victims of war
 3. by accident 4. old age (natural death)
 5. cerebral hemorrhage 6. malignant tumor (cancer)
 7. heart disease 8. kidney disease
 9. pneumonia and bronchitis 10. liver disease
 11. tubercular disease 12. acute contagious disease
 13. others (Please describe)

○Physique:
 height: weight:
 1. muscular and fat 2. fatty 3. average 4. lean

○Occupation: 1. agriculture, forestry, fishery 2. labor 3. sales, service
 4. office work, maintenance 5. executive, management
 6. other (Please describe)

○Drinking and smoking habit:
 Drinking: 1. drank heavily 2. average
 3. only occasionally 4. did not drink
 Smoking: 1. smoked heavily 2. average
 3. only occasionally 4. did not smoke

Name:
 Relation to the Deceased:

Table 2 The Second Survey Sheet

How to fill out: 1) Regarding questions (1)-(19) please circle the right numbers.
 2) Regarding questions 1)-46), each item contains five point-scale.
 Please circle the right number.

(1) Date of birth: age:
 (2) Height:
 (3) Weight:
 (4) Address:
 (5) Have you retired?
 —Yes 1) Retired under the age limit Year:
 2) Please describe the previous job precisely.
 —No 1) Before the age limit—how many years:
 2) no age-limit system

(6) About your family:
 —wife: 1. living 2. deceased 3. divorced (incl. separation)
 4. not married
 —child: 1. All are independent (not living with parents)
 2. Still dependent (supported by parents)
 3. no children
 —grand-child: 1. living together 2. not living together
 3. no grand-children
 —parents: What age did they die?
 If your parents are still alive, how old are they?

(7) School career: 1. elementary school under the old system
 high school under the new system

2. high school under the old system
technical college under the new system
3. technical college under the old system
university (incl. M.A.)
- (8) Present job: 1. full time 2. temporary 3. part-time 4. not working
- (9) Present duty: 1. daily service 2. shift system
3. others (Please describe) 4. not working
- (10) Kind of job: Please describe your job.
1. _____
2. not working
- (11) Annual income (including tax and pension):
1. under ¥1,000,000 2. 1,000,000 to under 2,000,000
3. 2,000,000 to under 3,000,000 4. 3,000,000 to under 4,000,000
5. 4,000,000 to under 5,000,000 6. 5,000,000 to under 7,000,000
7. over 7,000,000
- (12) Commuting hours: (from home to office—one way)
1. under 30 minutes 2. 30 minutes to less than one hour
3. one hour to less than two hours 4. over two hours
- (13) Sleeping hours: hours:
time to get up:
time to go to bed:
- (14) Chronic disease: 1. none 2. Yes (Please describe)
- (15) Medical history: 1. none 2. Yes (Please describe—when_____)
- (16) Blood Pressure:
high: 1. under 100 mmHg 2. 100 to under 140 mmHg
(systolic P.) 3. 140 to under 160 mmHg 4. over 160 mmHg
low: 1. under 70 mmHg 2. 70 to under 90 mmHg
(diastolic P.) 3. 90 to under 95 mmHg 4. over 95 mmHg
- (17) Smoking: 1. not smoke
2. smoke: (1) less than 10 cigarettes/day
(2) 11–20 „
(3) 21–40 „
(4) 41–60 „
(5) over 60 cigarettes/day
- (18) Drinking: 1. don't drink 2. several times a month
3. several times a week 4. every day
Quantity: 1. sake _____ (go)
2. beer _____ (bottle)
3. whisky (single) _____ (glass)
4. wine _____ (glass)
5. others _____ (glass)
- (19) Adaptability to alcoholic drinks
1. stronger than 3–4 years ago 2. same 3. weaker than 3–4 years ago
- 1) How do you feel about your physical condition?
5. well satisfied 4. almost satisfied 3. average
2. wishing to become stronger 1. always have troubles
- 2) How do you feel about your mental condition?
5. enjoying life every day 4. better than average
3. satisfied with the average life 2. lack of a sense of fulfillment
1. always feeling miserable
- 3) How is your satisfaction to social life?
5. living much significant life 4. satisfactory 3. average
2. lack of confidence 1. no significance in life
- 4) What do you think of your physical condition?
5. healthy enough without special care 4. best condition with care
3. can keep well without overwork 2. decline easily without care

1. invalid even with good care
- 5) What do you think of your life after retirement (economically)?
 5. prepared well 4. prepared but not enough 3. trying to prepare
 2. not willing to prepare 1. do not think about and do nothing
- 6) How do you feel when you go up the slope?
 5. quite easily 4. easily 3. somehow 2. with several rests
 1. with frequent rests—painful
- 7) How do you feel when you lift 20 kg object?
 5. quite easily 4. easily 3. somehow 2. with difficulty
 1. hardly can
- 8) How long can you continue to work in the same posture?
 5. for long hours 4. about an hour 3. about half an hour
 2. tired soon 1. can hardly
- 9) How is your movement or activity?
 5. always quick 4. quick in some degree 3. average
 2. occasionally hit here and there 1. unstable hitting here and there
- 10) How is your movement when you get on and off a taxi?
 5. very quick 4. rather quick 3. average 2. a little slow
 1. taking time enough to irritate the driver
- 11) How many hours can you walk easily?
 5. about 2 hours 4. about 1.5 hours 3. about 1 hour
 2. about 30 minutes 1. unwilling to walk
- 12) Do you stumble when you walk?
 5. don't 4. rarely 3. occasionally 2. often 1. all the time
- 13) How do you feel when you go up the stairs?
 5. no palpitation and breathlessness at all 4. a little 3. palpitate soon
 2. continue to palpitate quite a long time 1. unable to ascend without rest
- 14) What kind of sport can you play?
 5. Can play soccer, basketball, rugby 4. tennis, swimming
 3. golf, pingpong, catching ball 2. radio gymnastics, taking a walk
 1. can hardly
- 15) Can you hear well when you talk with others?
 5. very well 4. well except in very low voice
 3. occasionally miss the conversation 2. frequently have to ask again
 1. can hardly
- 16) How is your appetite?
 5. have a strong 4. rather strong 3. average 2. diminishing
 1. almost none
- 17) How often do you catch a cold?
 5. seldom 4. only occasionally 3. occasionally 2. often 1. always
- 18) How do you feel about your stomach and intestines?
 5. very good 4. good 3. average 2. rather weak 1. very bad
- 19) Do you have stiff neck?
 5. don't 4. rarely 3. occasionally 2. quite often 1. always
- 20) How smoothly can you recover from illness or injury?
 5. very smoothly 4. rather smoothly 3. average
 2. rather slow 1. very slow
- 21) Do you usually feel fatigue?
 5. don't 4. rare 3. occasionally 2. often 1. very often
- 22) How fast can you recover from fatigue?
 5. very soon 4. recover in an overnight
 3. can not recover until the following day 2. cannot work next day
 1. take more than three days
- 23) How do you feel after an all-night sitting?
 5. don't feel any effect 4. can work normally unless hard labor
 3. don't feel any serious trouble with a day's rest
 2. need the entire following day to rest 1. cannot sit all-night

- 24) How do you feel when you wake up?
 5. very good 4. good 3. average 2. not so good 1. very bad
- 25) How do you feel when you cannot sleep well?
 5. feel no trouble 4. can bear with a little pain
 3. can bear somehow but with much pain 2. feel dizzy with fatigue
 1. unable to work
- 26) Can you sleep well?
 5. very well 4. well 3. average 2. not so well 1. cannot sleep
- 27) How do you feel when you work in noisy place?
 5. don't mind at all 4. do not mind 3. do not mind though feeling noisy
 2. sometimes unable to concentrate 1. unable to concentrate at all
- 28) How do you feel about your daily life?
 5. living with full of life 4. living with pluck
 3. somehow living healthily 2. often feel depression
 1. having a wretched life without pride
- 29) What do you do when you feel depressed?
 5. recover soon 4. recover the following day
 3. worry a little but soon recover 2. worry about rather a long time
 1. worry about for a long time
- 32) Are you satisfied with your housing condition?
 5. very much 4. no special complaints 3. satisfied somehow
 2. not satisfied 1. not satisfied at all
- 33) How do you feel when you go on working for a long hours?
 5. as if time passes very smoothly 4. time passes smoothly
 3. sometimes smoothly, sometimes not
 2. sometimes feel the working hours too long
 1. always feels the working hours too long and very hard to continue working
- 34) What do you think of your job?
 5. have pride in 4. have some pride 3. average
 2. cannot have pride in 1. feel inferior
- 35) How do you spend your holidays?
 5. filled up 4. spend without boredom 3. sometimes bored
 2. very often bored 1. completely bored
- 36) Can you make use of your leisure hours?
 5. always to a greatest extent 4. to a great extent 3. sometimes
 2. rarely 1. not in the least
- 37) How can you spend your leisure hours after retirement?
 5. can live to the full 4. can enjoy the life 3. somehow enjoy the life
 2. feel a little anxious 1. always worry about it
- 38) What do you think of a job which requires new technology?
 1. willing to face it 4. to face it anyway 3. try to face it
 2. not so willingly 1. cannot
- 39) Do you think you can catch up with the technological development?
 5. have much confidence in my ability 4. quite well 3. somehow
 2. wish to follow but with no confidence 1. without confidence in my ability
- 40) Can you concentrate you attention to what you are doing?
 5. can very well 4. can well 3. occasionally unable to concentrate
 2. unable to concentrate 1. do not know what to think
- 41) How do you think when your feeling is hurt?
 5. do not mind at all 4. quite cool 3. a little hurt 2. worry a lot
 1. unable to recover from inferiority complex.
- 42) What do you do when you want to insist your opinion?
 5. insist by all means 4. try to insist as much as possible
 3. make efforts to insist 2. depend on the situation 1. have no will to insist
- 43) How do you feel about your memory?
 5. have very good memory 4. have good memory 3. average
 2. something forget things recently 1. often forget things

- 44) Can you adapt yourself to sudden changes of situation or circumstance?
 5. can quickly 4. can in some degree 3. take time to do
 2. take quite a long time 1. worry for a long time unable to adapt
- 45) How do you react to a work required a lot of patience?
 5. can finish the work with confidence 4. try hard to finish the work
 3. feel some difficulties 2. unable to continue for a long period of time
 1. give up soon
- 46) How do you feel while you are working?
 5. can devote myself to the work 4. can devote myself unless absolutely compelled
 3. sometimes become absent-minded 2. think something else absent-mindedly
 1. often become absent-minded

B. The Second Survey

The Five-Point-Scale Health Evaluation Questionnaire (Table 2) developed by Human Function Research Center, was applied to the survey of 1981. There were 46 items of questions including 13 items concerning physical fitness, 11 items of resistivity, 12 items of psychological state, and 10 items of social adaptability. The subjects were chosen from the Judoists on the Kodokan High-dan Holder's List (1978). They were born from 1912 to 1931 (age 50–69) and were living in Tokyo and its neighboring cities.

II. Result and Discussion

A. Survival and Death

1. Collection of Questionnaire

The collection rate of questionnaire in 1979 was 66.3%. The survey covers 88.4% of the total subjects including the result of the survey of 1980. The details are shown in Fig. 1. In group A, 83.8% of 117 was living, 3.4% was deceased, and 12.8% was unidentified. In group B 10.7% was unidentified, in group C, 9.5%, and in group D, 15.6%. Since nearly 90% of the total subjects could be identified, we think we could get a good result.

2. Transition of Survival Rate

In the Fig. 2, we plotted to show the transition of survival rate in every other year, setting the number of subjects as 100% population. The survival rate of group A (age 40's) decreased from 0.2 to 0.4% every year. There was a 1.0 to 1.6% decrease in group B (age 50's). The first half of group C

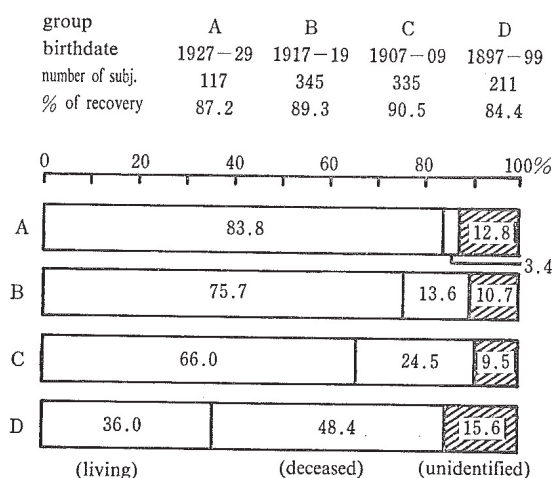


Fig. 1 Subjects & Collection of Questionnaire

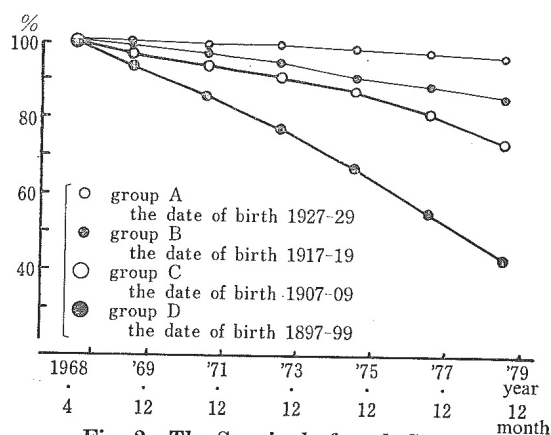


Fig. 2 The Survival of each Groups

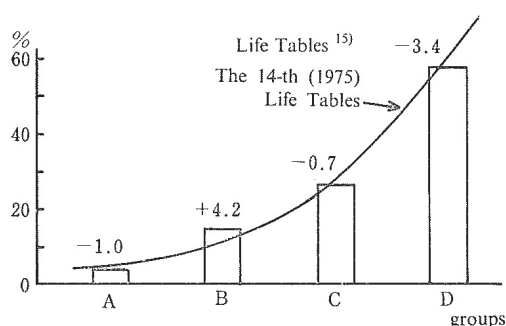


Fig. 3 Death Rate in Twelve Years of the Survey

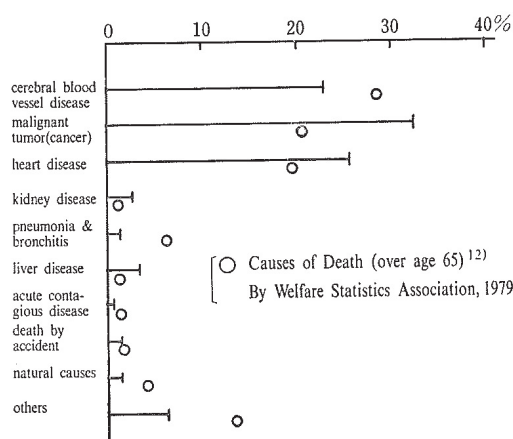


Fig. 4 Causes of Death

(age 60's) showed 1.5% of decrease and the latter half showed 2.6% decrease. The first half of group D (age 70-74) showed 3.3% of decrease and the latter half (age 75-79) showed 7.0% decrease. There was a 10.8% decrease in the group over 80 years old. The trend of decrease gets sharp as the age grows higher. In the comparison with the rates in the Japanese Life Table of 1975, these rates of Judo players' is within $\pm 0.5\%$ in each age group. This indicates that the Judo players' movement of population is almost the same as that of the ordinary people. A comparison of the mortality has been made between the Judo players and the ordinary people in Japanese Life Table¹⁵⁾ in 12 years (to be exact, 11 years and 8 months) (shown in Fig. 3). It was the same period as Fig. 2 (as of December, 1978), but it was a study from a view of mortality instead of survival rate. In group A the deceased were 4 out of 102, mortality 3.9%. In group B the deceased were 47 out of 308, mortality 15.3%. In group C the deceased were 82 out of 303, mortality 27%. In group D the deceased were 102 out of 178, mortality 57.3%.

The mortality of the ordinary people based on the Life Table¹⁵⁾, setting the population of each age group as 100% with a formula:

$$\frac{\text{concerned age population} - \text{population after 12 years}}{\text{concerned age population}}$$

Group B showed 4.2% of higher mortality than the ordinary people, while three other groups showed lower mortality. In general it can be said that the mortality of Judo players is about the same to that of the ordinary people.

3. Causes of Death

The cause of death of 138 persons whose causes could have been confirmed are shown by percentage in Fig. 4. The cause of death which ranked first was malignancy (32.6%), the second was heart disease (26.1%), and the third was cerebral blood vessel disease (23.2%). Since the first collection of the investigation was done in December, 1979, some of the subjects had already been dead before the date. The information of causes of death of the ordinary people was adopted the investigation of 1977. The cause of death of the Japanese males over 65 the rank first¹²⁾, is cerebral blood vessel disease (28.6%), and the second is malignant tumor (20.8%), and heart disease (19.6%) including hypertensive disease follows. In 1979¹⁴⁾ the percentages of the above items became 26.1, 22.6, and 20.1. According to the synopsis of The Population Movement Statistics¹⁶⁾ covering the whole Japanese population, cerebral apoplexy has been decreasing from the peak period of 1965-1970, and

the mortality became 133.9 persons per 100,000 persons in 1981. Instead, the case of cancer and heart disease increased. In 1981 the mortality of heart disease was 107.5 per 100,000 and that of cancer was 141.3 per 100,000. Cancer ranked first in 1981. If this tendency will continue, in a few years the mortality of heart disease may get ahead of cerebral apoplexy.

In the case of Judo players, the rate of the causes of death indicates several years ahead that of the ordinary people. This may well be called European type of death causes.

A comparison was made on the causes of death of Judoists and the ordinary people.¹²⁾ The three persons (group A) who died at the age between 40 and 50 all died of malignant tumor (100%). And in the case of the ordinary people are 40's malignant tumor ranks first. In group B (at the age between 50 and 62) the ratio of malignant tumor was 38.7%, cerebral blood vessel disease was 22.6%, and heart disease was 19.4%. It is the same ratio as the group of age 50's of the ordinary people. In group C (died at the age from 60-72) the ratio of malignant tumor came first (39.1%), the second was heart disease (30.4%), and the third was cerebral blood vessel disease (17.4%). In the case of the ordinary people of the age 60's malignant tumor came first, cerebral blood vessel disease came second, and heart disease came third. In group D (died at the age from 70 to 82) the order was cerebral blood vessel disease (29.3%), heart disease (27.6%), and malignant tumor (20.7%). In the case of the ordinary people (age 70's), the order was cerebral blood vessel disease, malignant tumor, and heart disease. The second and the third are in the reverse order to the Judo players'.

B. Health Condition

As for the investigation into the present condition of health, answers were made by encircling the following items: 'very good', 'comparatively good', 'average', 'not so good', and 'invalid'. Three-point-scale (good, average, not so good) were made in order to compare with the results of Health Condition of the Japanese shown in Fig. 5. 'Good' was 56.6% (group A), 56.3% (group B), 57.1% (group C), and 50.9% (group D). Every group is over 50%. These figures indicate that the result of Judo players is better than that of the opinion poll²⁰⁾, (41.8% for 50's and 46.9% for over 60). The ratio answering 'not so good' was 12.1% (group A), 13.9% (group B), 20.9% (group C), and 27.3% (group D). In comparison with the ordinary people (16.3% for age 50's and 24.2% for age over 60), the ratio is low except group D (age around 82) and this means that there are fewer unhealthy people among the Judoists.

Regarding the medical history of each subject shown in Fig. 6, 18.1% of hypertension in group A stands out but other items are under 10%. The percentage of those who answered 'nothing' is 51.8%.

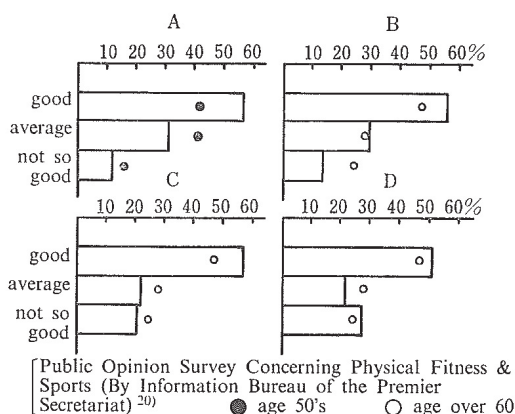


Fig. 5 Health Condition

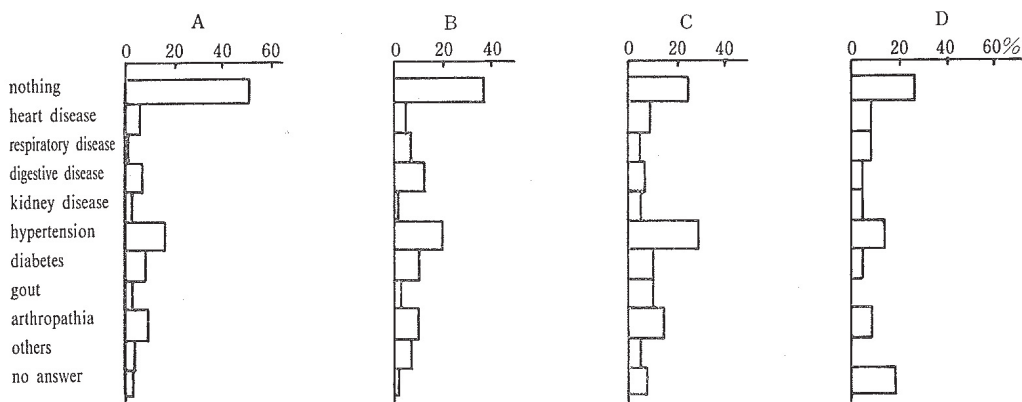


Fig. 6 Medical History

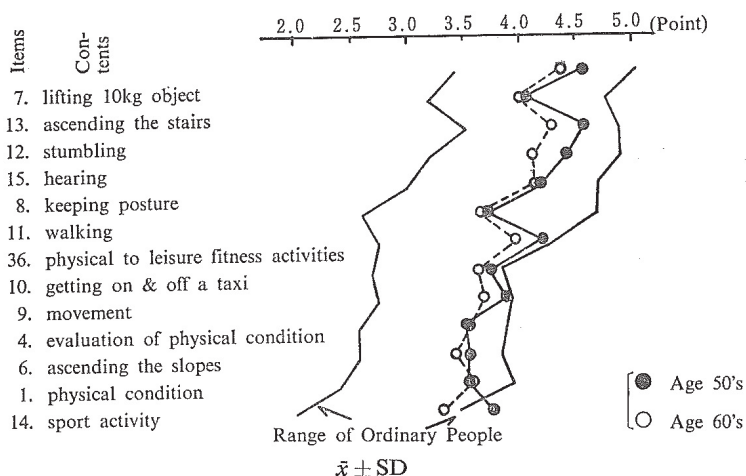


Fig. 7 Average Point in 5-point-scale of Health Degree (Physical Fitness)

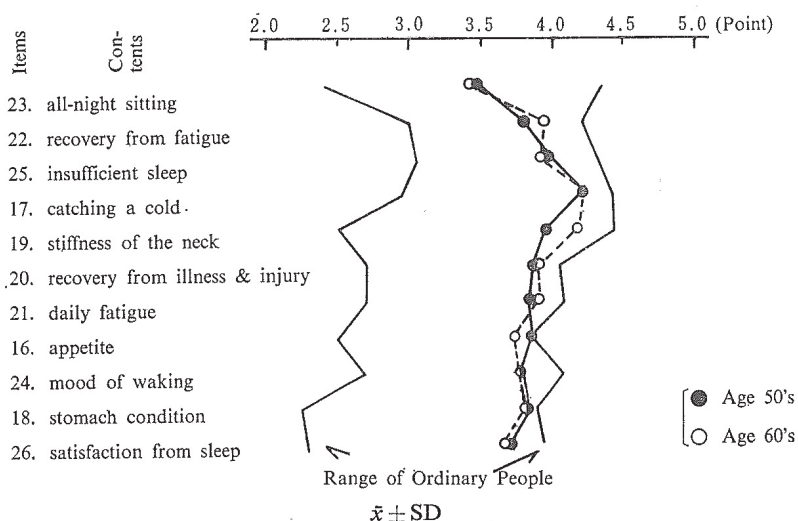


Fig. 8 Average Point in 5-point-scale of Health Degree (Resistivity)

In group B hypertension, respiratory disease, diabetes, and arthropathia are over 10% each. 'Nothing' is 38.1% in this group. In group C hypertension is 30.3%, arthropathia is 15.2%, diabetes and gout are 10.7% each, and heart disease is 9.6%. In group D it is not proper to state anything definite, for there was 20% of without answer. In general the rate of physical complaints among the Judoists was low and the 14.5% of hypertension is the highest. The result suggests that the subjects of each group are living in better condition of health than the ordinary people.

We also studied the health condition by the Five-point-scale self evaluation method containing 46 items developed by Human Function Research Center.²²⁾ 637 sheets of questionnaire were sent and 277 were recovered. However, the 8 of them proved invalid because of the incorrect date of birth and of the deceased. The recovery rate was $269/629=42.8\%$. Then we divided the 46 items into 4 parts and compared to those of the ordinary people (shown in Fig. 7-10). The total average is shown in Fig. 11. The value of the ordinary people²²⁾ is shown in the range of average value $\pm$ standard deviation.

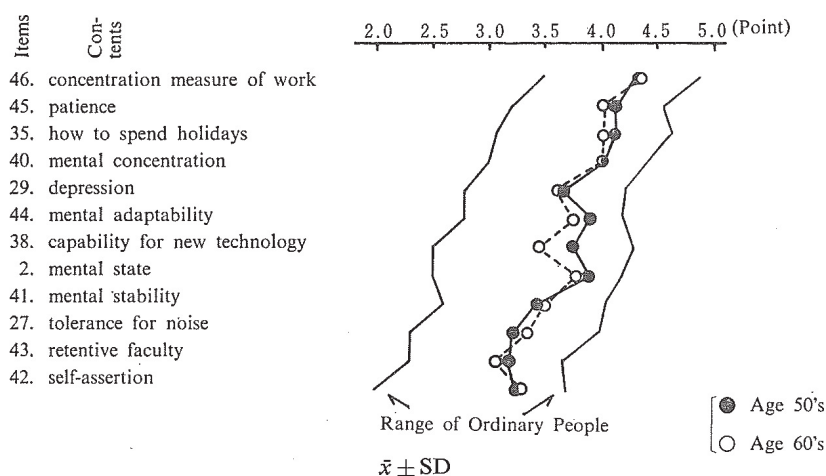


Fig. 9 Average Point in 5-point-scale of Health Degree (Mental Condition)

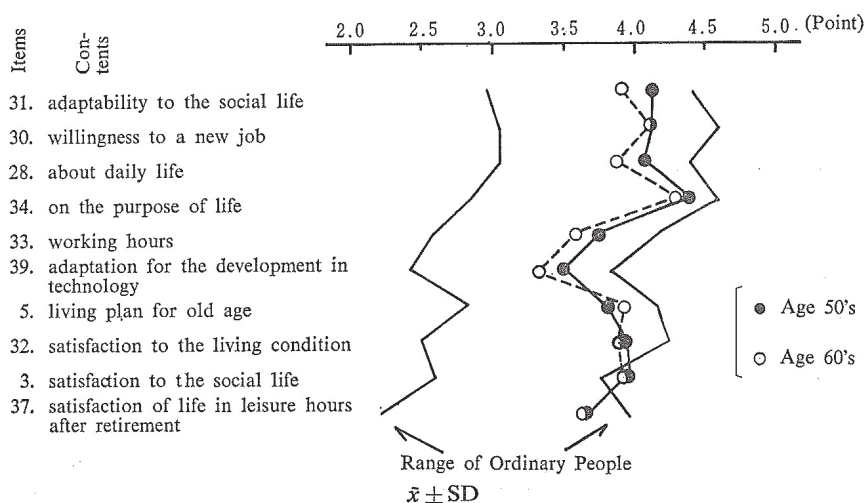


Fig. 10 Average Point in 5-point-scale of Health Degree (Social Adaptation)

tion of urban residents at the age of 50's. The value of Judo players (50 to 59) showed higher value than the average in the 13 items of physical elements (Fig. 7), and the values are distributed closer to $+SD$. Their total average was also high (3.97 points against 3.56 points of the ordinary people).

As for 11 items concerning resistivity (Fig. 8), the distribution is closer to $+SD$ than the element of physical fitness. The average is 3.85 point which is higher than 3.50 point of the ordinary people. As for 12 items of psychological condition (Fig. 9), it is not so remarkable as the former two but is still above the average. The total average is 3.75 point against the 3.48 point of the ordinary people. As for 10 items of social adaptation (Fig. 10), the distribution was closer to $+SD$. The average value was 3.92 point against the 3.46 point of the ordinary people. The points of age 60's are 3.81, 3.87, 3.66, and 3.83. The average point of Judoists at the age 60's is approximately 0.2 point higher than that of the ordinary people and about 0.4 point higher than that of 50's. With this result we are able to conclude that the health condition of the Judoists was quite good.

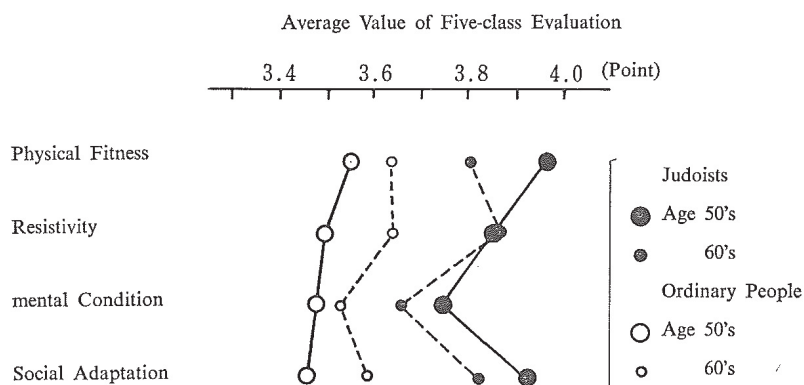


Fig. 11 Average Point by Health Degree Measure

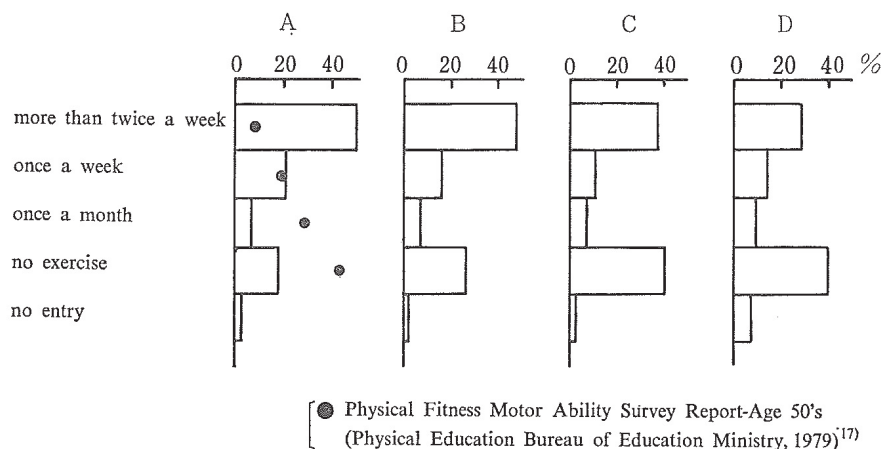


Fig. 12 Exercise

C. Exercise

In the survey report of physical fitness and motor ability by the Education Ministry,¹⁷⁾ the survey on the exercise frequency is made by Four-point-scale method: 3–4 times a week, 1–2 times a week, 1–2 times a month, and none. The comparison with our survey is shown in Fig. 12 more than twice a week, once a week, once a month, and none.

The percentage of those who take exercise more than twice a week is 50.6 in group A, 48.1 in group B, and 38.2 in group C as against about 10% of the ordinary people. Concerning group D (age around 82 at present) the percentage of 'more than twice a week' was 29.1, even though they only do light exercise or take a walk. The result shows that 43.6% of this group (group D) including the people of doing exercise 'once a week', still take some exercise regularly. In the case of the ordinary people 44% of them do not exercise at all. Among the Judoists the ratio of 'no exercise' is as follows: 18.1% (group A), 26.4% (group B), 40.4% (group C), and 40.0% (group D). The result (40.4% of group C and 40.0% of group D) is equal to the ratio of age 50's of the ordinary people which shows that the amount of exercise of Judoists (groups C and D) is very large.

Among the Judoists the ratio of those still continuing to practice Judo more than once a week is 31.3% in group A, 37.8% in group B, 12.4% in group C, and 5.4% in group D. Naturally the value of percentage decreases as the age grows. However, there are many who discontinued Judo practice but are taking some kind of exercise more than once a week. The percentages of them are 13.2% in group A, 20.5% in group B, 21.3% in group C, and 27.3% in group D. The ratio increases as age goes up. Therefore the exercise frequency does not decrease sharply. This fact shows an obverse and reverse relation to the result of precedent item indicated many of healthy people. It has been clearly proved by the value that the high rate of practicing exercise among the Judo high-dan holders was very high.

D. Favorite Food and Smoking

1. Drinking

The condition of drinking is shown in Fig. 13. The subjects in group A drink more than the ordinary people. The subjects of other groups do not drink so much. Concerning those who do not drink at present, the percentage in group B is 26.0%, in group C it is 40.5%, and in group D it is 45.4% against 15% of the ordinary people. The value of percentage decreases as age grows.

In the comparison between the existing persons and the deceased among Judo players (group A was excepted because of the very few number of the deceased), the ratio of heavy drinking in group B was 13.0% (the existing): 63.3% (the deceased). In group C it is 20.2% (the existing): 36.6% (the deceased). In group D it is 12.7% (the existing): 33.3% (the deceased). The figures of ratio show that there are overwhelmingly great many of drinkers among the deceased in each group.

2. Smoking

The condition of smoking is shown in Fig. 14. The most remarkable fact is that there are many who used to have smoking habits and abandon them now. Thus the ratio of non-smokers is much larger than that of 22.8% in the Education Ministry Report¹⁷⁾ and 31.3% of Igawa's report⁷⁾—group A: 49.4%, group B: 37.2%, group C: 55%, and group D: 63.6%. Each figures show large difference from those in the above two reports.

Among the Judo players, the percentages of the persons who smoke more than 20 cigarettes a day are 26.0% (group B), 15.2% (group C), 7.3% (group D). Those of the deceased players are 46.7% (group B), 43.9% (group C), 24.1% (group D). These figures are much larger than those of the existing players. The ratios of those who smoke 10–20 cigarettes a day are 30.3% (group B), 22.5% (group C), 18.2% (group D), and those of the deceased are 36.7% (group B), 39.0% (group C), 27.8% (group D). The percentage of smokers among the deceased is much larger than that of existing persons. It is interesting to find that the percentage of the deceased is larger than that of the existing persons in the cases of smoking and drinking. It is possible to say that the deceased are rather careless

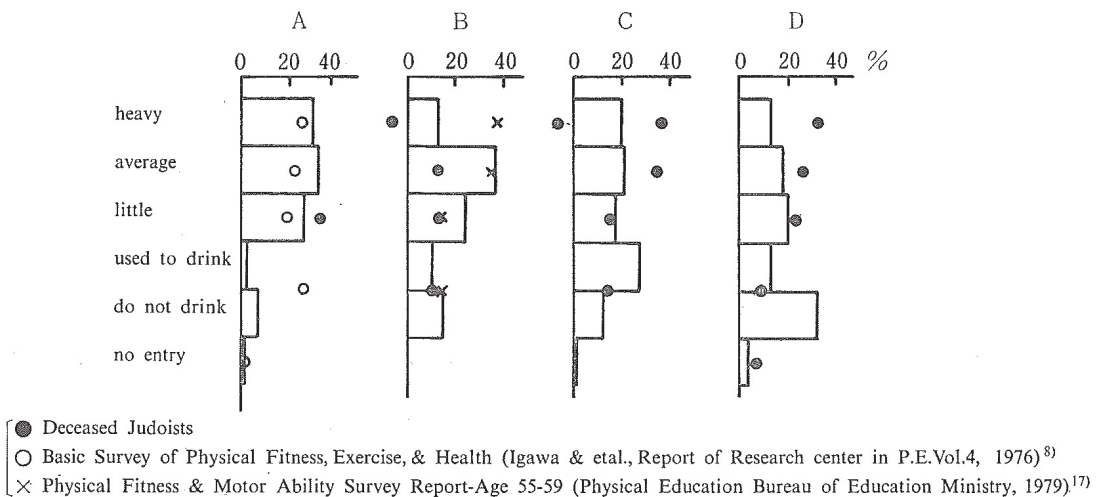


Fig. 13 Drinking

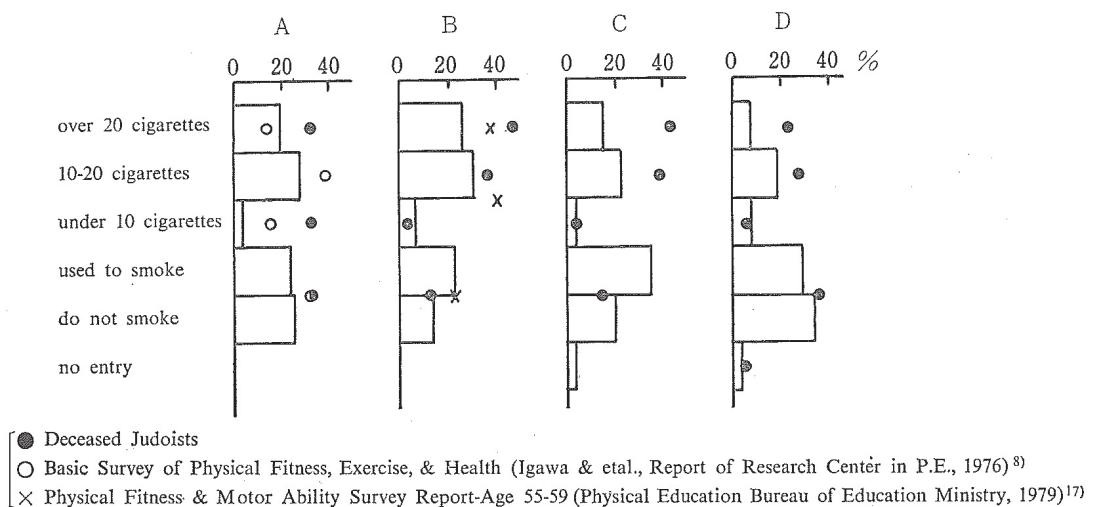


Fig. 14 Smoking

to their health. On the other hand, the ratio of the existing persons in drinking and smoking is smaller than that of the average, which proves their prudent consideration to the health.

E. Cross Totalization

1. Answers to the Items Classified by Health Condition

The study on the answers to the questions about health condition of group B (the number of subjects is greatest) is shown in Fig. 15. As for the previous diseases, 13.9% of hypertension, 11.5% of digestive disease, and 10% of arthropathia stand out. Of those who answered 'average', the highest ratio of the disease is 30.4% of hypertension, and 21.7% of digestive disease. Four other diseases are over 10%. Regarding those who answered 'not so well,' the percentages of the diseases were 34.4% each of hypertension and diabetes, 15.6% each of heart disease and arthropathia, and 12.5% each of digestive disease and gout. A strong relation can be recognized between health condition and the previous diseases. As for the exercise, it is difficult to declare whether they are healthy because they

take exercise or vice versa. Anyway, those who take exercise will get healthier and those who do not will become less healthy, and the difference between the two will get larger. Among the answers of 'very good' and 'good', 50.8% of them is 'nothing' about the medical history. The ratios between 'heavy' and 'average' smokers of them are nearly the same. On drinking 42% of the subjects whose answers are 'very good' and 'good', answered 'average'. There are very few who answered 'do not drink'. Among those who answered 'not so well', 62.6% of them are 'used to smoke' and 'do not smoke', and only those who answered 'heavy and average' are few. The result shows that those of 'not so well' restrict themselves to drinking alcohol but not to smoking. It seems to be necessary for them to pay more attention to their smoking habits. Regarding the physique, the questions are made about the weight of their school days and that of the age 30-40 and of the age 50's. The result showed that those of 'very good' showed almost no change in their weight and those of 'not so well' showed a slight increase. Some of them weigh nearly 80 kg. Considering the fact that many of them have had hypertension and diabetes, the effect of over-weight can be seen here. It is necessary for them to reduce the body weight steadily paying attention to nutrition and exercise.

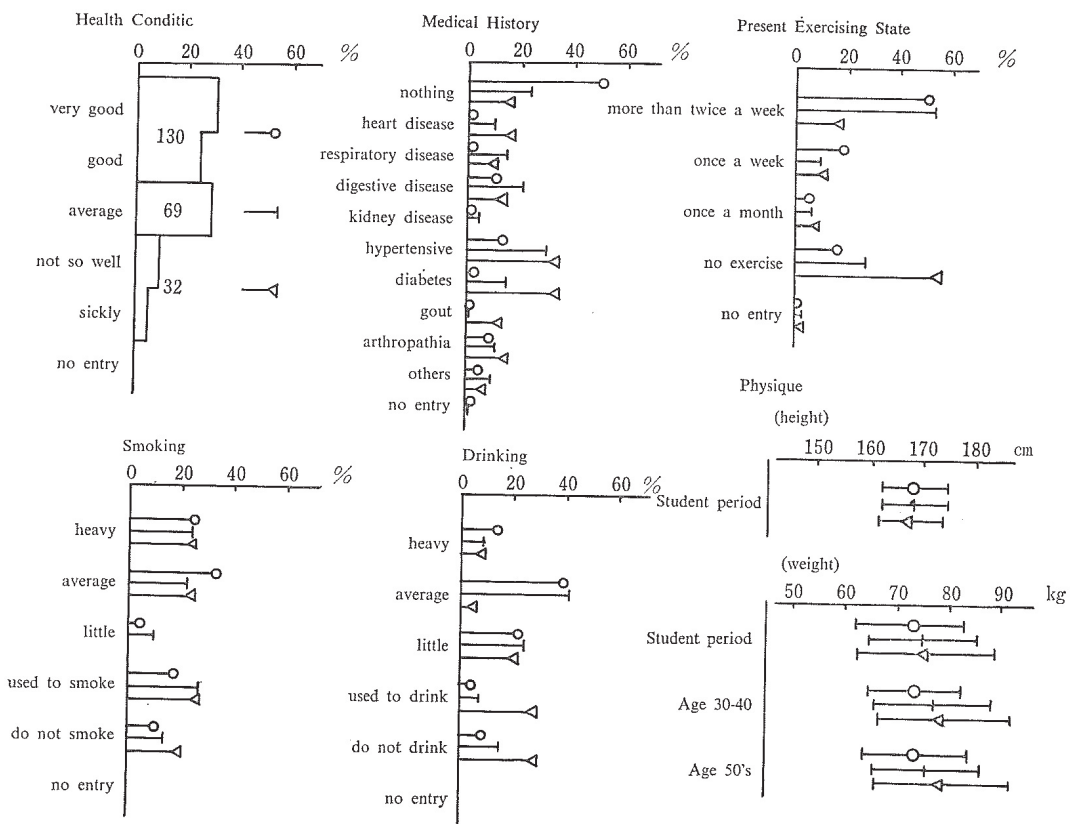


Fig. 15 Answering State by Health Condition (Group B)

2. Relation between Face Sheet and Four Items of Health Condition

On the top of five-scale health questionnaires there are items of investigations concerning physique, living style, and working state. We cross-totalized those 19 items and 46 items of health degree, which is shown in the six figures. Since there is no difference between the answers of the age 50's and those of 60's, we totalized them into one.

The health degree by Rohrer's Index is shown in Fig. 16. According to the classification of obesity, standard, and thin (the 'fat', the 'average', and the 'thin') by the height and the body weight, the ratio of the 'fat' is 69.7% and that of the 'thin' is only 1.1%. When we put the Rohrer's Index a little higher level, then we get the result that those of under 140 are 17.2%, 140-159.9 are 40.1%, 160-179.9 are 28.5%, and over 180 are 10.1%. The group 'under 140' showed low in point in the items of mental condition and the group over 180 showed low in point in the physical fitness. The average of each group is within 3.79 to 3.85. No significant difference of health condition was observed

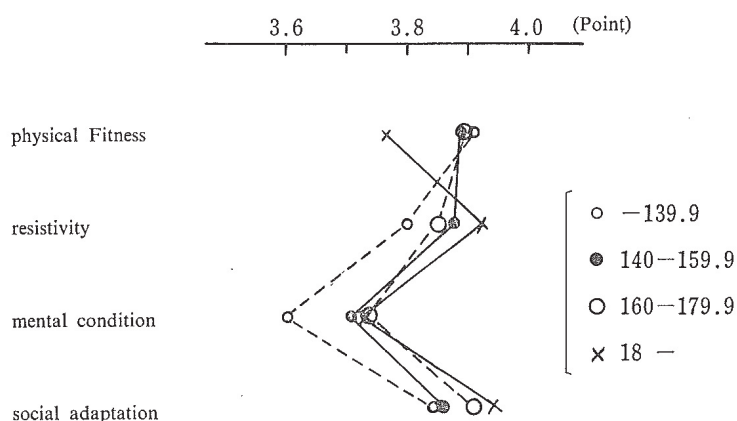


Fig. 16 Rohrer's Index & Health Degree

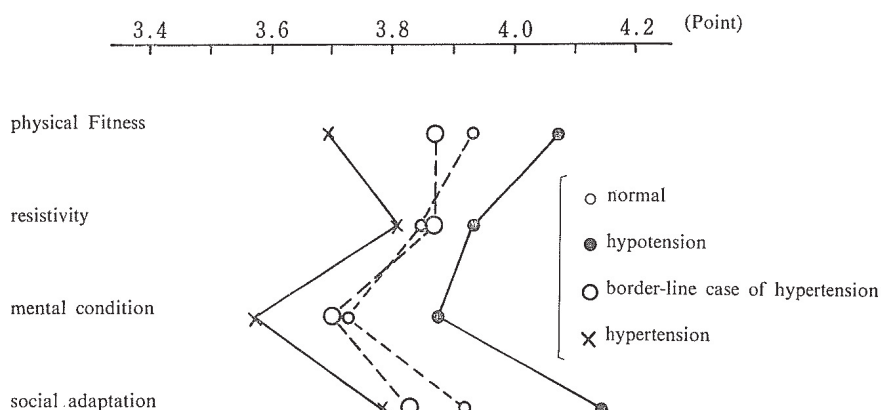


Fig. 17 Blood Pressure & Health

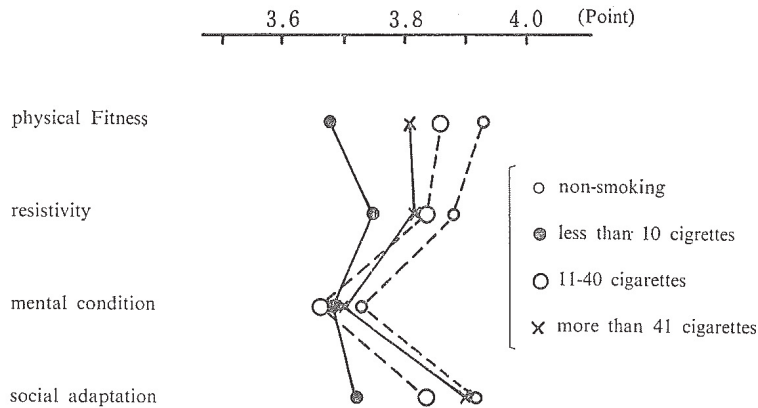


Fig. 18 Smoking & Health

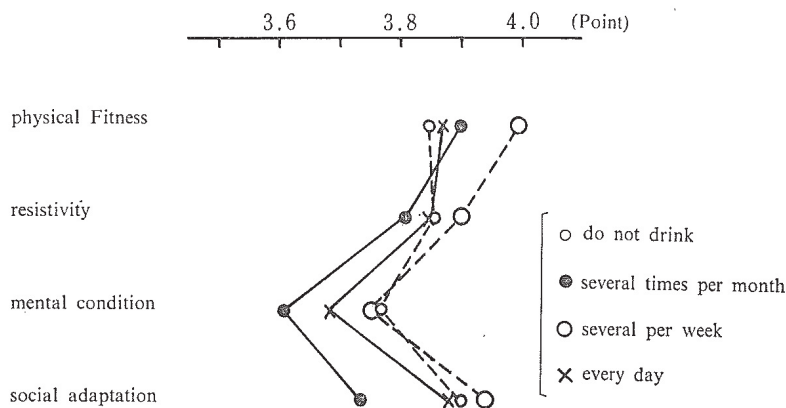


Fig. 19 Drinking & Health

concerning obesity as in the first investigation. The relationship between blood pressure and health are shown in Fig. 17. The distributions are: 'normal' is 40.8%, 'hypotension' is 1.5%, 'border line case of hypertension' is 38.6%, and 'hypertension' is 13.9%. The average point of the group of hypotension is 4.01, normal is 3.86, border line case of hypertension is 3.82, and hypertension is 3.71. Since the number of people with hypotension was small, we cannot easily decide that their health condition is good. The self evaluation of the persons with hypertension is the lowest in point of the four groups on 4 items, which indicates that the health condition of the people with hypertension is not very good. The relationship between health and smoking is shown in Fig. 18. 'Non-smoking' is 53.4%, 'less than 10 cigarettes per day' is 4.5%, '11-40 cigarettes per day' is 36.8%, 'over 41 cigarettes per day' is 3.7%. The non-smoking group showed the highest health condition. Their average point on the 46 items is 3.87 point. They also show the highest in the 4-point-scale, though the difference from others is very little. The group showed the lowest evaluation was the group of smoking 'less

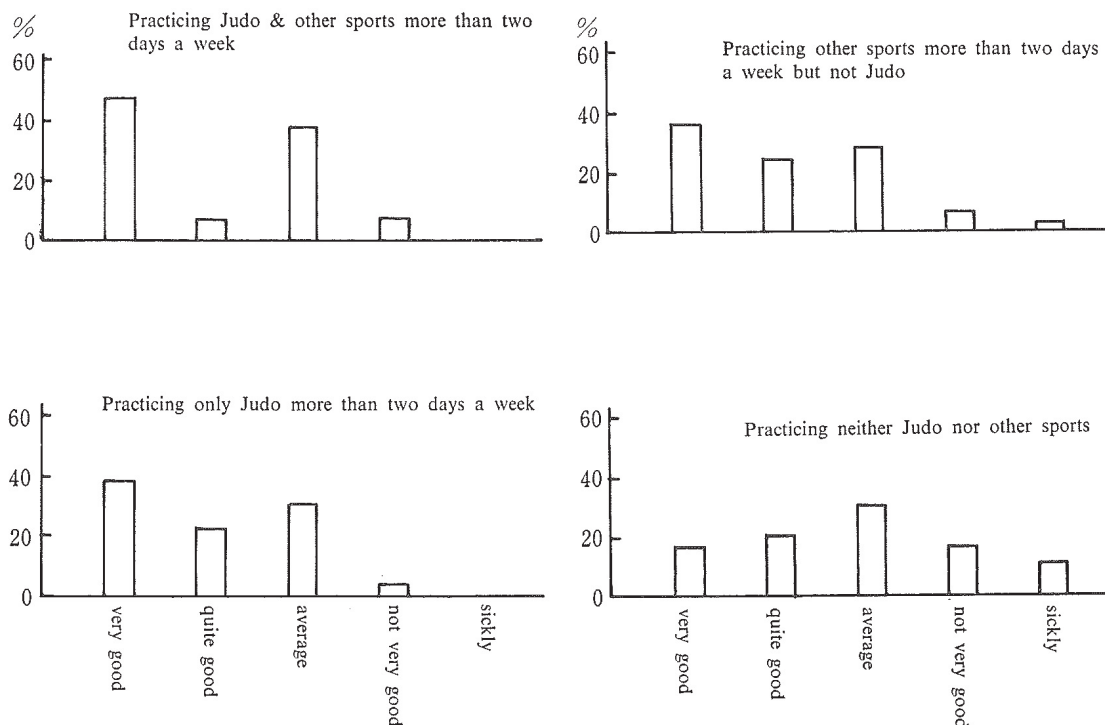


Fig. 20 Exercise & Health Condition

than 10 cigarettes per day'. The average was 3.71 point.

Regarding drinking, 'do not drink' is 22.5%, 'several times a month' is 12.7%, 'several times a week' is 18.7%, and 'every day' is 43.4%. The relationship between health and drinking is shown in Fig. 19. The group 'drinking several times a week' showed the highest evaluation, and the lowest was the group 'drinking several times a month.' The total average of 'non-drinking' group is 3.84 point, 'several times a month' is 3.76 point, 'several times a week' is 3.90 point, and 'every day' is 3.82 point, which shows very little differences among each group.

3. Practicing Exercises

We divided group B (age around 62) into 4 groups: those who are practicing Judo and other exercises more than two days a week (13 persons), those practicing Judo only more than two days a week (46 persons), those practicing other exercises but not Judo more than two days a week (32 persons), and those not practicing anything at present (60 persons). Fig. 20 shows their health condition. About 40% of those who answered 'very good' is in practicing exercise 3 groups. However, the group 'not practicing any exercise' showed the normal distribution type, which indicates that this group is different from other groups who are practicing exercises. The significant difference on health is clearly seen between exercising groups and non-exercising group. It can be said that this data has something common with those of Suzuki's reports³⁰⁾ (no adipositas in exercising groups), J.L. Boyer and F.W. Kasch⁴⁾ (declining blood pressure by six months' training for the hypertensives), and Yoshimura³¹⁾ (arteriosclerosis appears about ten years later in the marathon practice group than the control group). It suggests how it is effective for our health to take some exercises. As for the kind of exercises, there was no conspicuous difference between Judo and other sports.

In the same way, the case of smoking is shown in Fig. 21. Of those who smoke more than 10

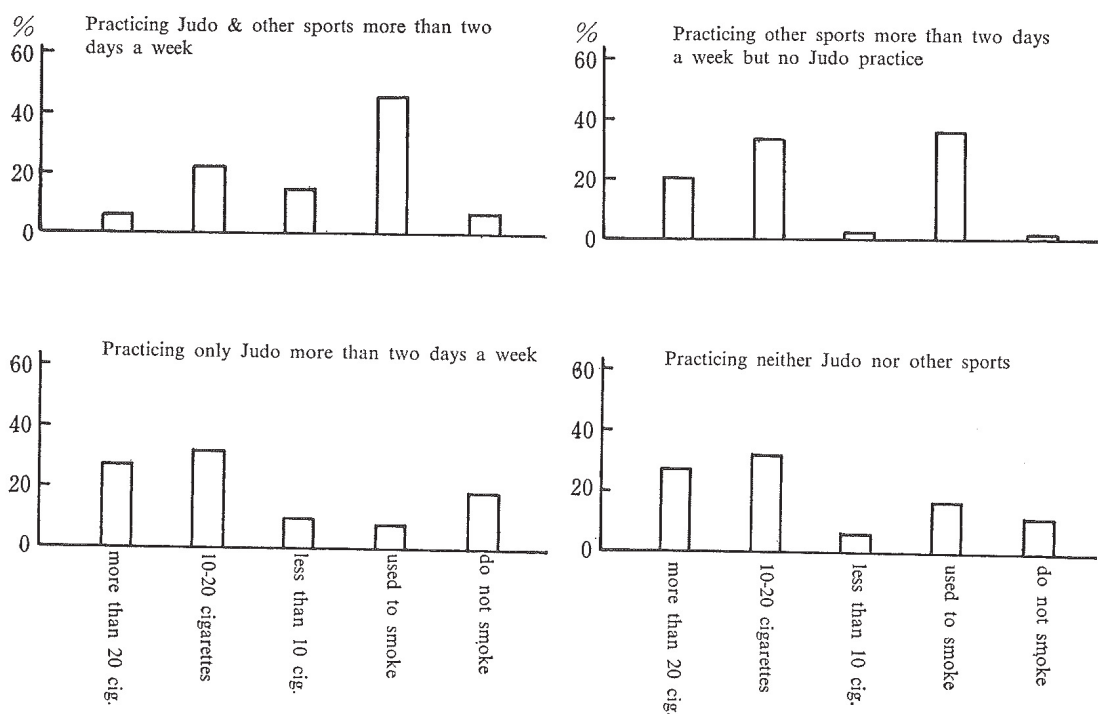


Fig. 21 Exercise & Smoking

cigarettes per day, the group practicing Judo and other exercises more than two days a week are 30.7% of them, 60.8% are practicing Judo only, 56.3% are practicing other exercises except Judo, and the non-practicing group is 61.6%. The ratio of smoking is the lowest in the group practicing Judo and other exercises. Concerning those who used to smoke but quit smoking, the group practicing Judo and other exercises more than two days a week was 46.2% which covered nearly a half of the total number, the group practicing Judo only was 8.7%, the group practicing other exercises was 37.5%, non-practicing group was 18.3%. Non-smokers positively practice Judo and other exercises followed by the group who quit Judo but practicing other exercises. As the result, it is suggested that those who are practicing exercises keep watching their own health thoroughly. It has something common with M. J. Karvonen, et al,¹⁷⁾ theory: the players of the sports which require endurance have low blood pressure, are physically active, and smoke less—these characteristics will contribute to extend their mortality. It is surmised that the positiveness for exercise and care for health produces a synergism.

III. Conclusion

The high dan-holders' health condition was mainly very good and their ratio of practicing exercise is also high. Their frequency of drinking and smoking was lower than ordinary people, which showed their pay good attention to their health. In the case of the deceased, however, drinking and smoking are larger in quantity, which might indicate their carelessness about their health.

The mortality of them for the last 12 years was about the same as that of average on the Japanese Life Table. The disadvantage as expected by the somatotype of the Judoists is not seen here at all. Concerning the life span of sports players having been reported before, the important point was not

their exercising state in the past but the fact whether they were still exercising or not. On this matter it can be said that many of Judo high dan-holders are practicing healthy life.

REFERENCES

- 1) Azuma, T., Yamamoto, M. and Nohara, M.: *The Life Span of Sports Players Studied from the Causes of Death*, Juntendo University, Bulletin of Health and Physical Education, 3: 30-36, 1960.
- 2) Baba, S.: *Obesity and Diabetes*, Popular Medicine, 28: 59-61, 1969.
- 3) Barr, D. P.: *Health and Obesity*, New Engl. J. Med., 23: 967-70, 1953.
- 4) Boyer, J. L. and Kasch, F. W.: *Exercise Therapy in Hypertensive Men*, J. A. M. A., 211(10): 1668-71, 1970.
- 5) Goldner, M. G.: *Obesity and Its Relation to Disease*, New York State J. Med., July 1: 2063-69, 1956.
- 6) Hasegawa, Y.: *Obesity and Disease*, Health Science, 16(6): 358-63, 1974.
- 7) Hishinuma, S.: *Research into the Life Span*, Toyo Keizai Shinposha, 1978.
- 8) Ikawa, S., Matsui, H., Minamitani, K., Numajiri, K., Suzuki, S., Takazawa, H., Usuya, S., Yamamoto, T., Yamaoka, S., Yorigane Y. and Ikuta, K.: *A Basic Survey of Physical Fitness, Exercise, and Health*, Rep. Res. Cent. Phys. Ed., 4: 221-40, 1976.
- 9) Kanai, K.: *Obesity and Insurance Medicine*, Hormone and Clinical Medicine 11: 634-40, 1963.
- 10) Karvonen, M. J., Klemola, H., Virkajarvi, J. and Kekkonen, A.: *Longevity of Endurance Skiers*, Medicine and Science in Sports, 6(1): 49-51, 1974.
- 11) Kitamura, K.: *The Role of Sport Activities in the Prevention of Cardiovascular Malfunction*, Proceedings of International Congress of Sports Sciences, 79-91, 1964.
- 12) Health and Welfare Statistic Association: *Welfare Index, Trends of People's Health*, 26(9): 1979.
- 13) *ibid.* 27(9): 1980.
- 14) *ibid.* 28(9): 1981.
- 15) Statistics and Information Dept. of Minister's Secretariat, Ministry of Health and Welfare: *The 14th Life Tables*, Health and Welfare Statistics Asso., 1979
- 16) Statistics and Information Dept. of Minister's Secretariat, Ministry of Health and Welfare: *Vital Statistics of 1981*, Health and Welfare Statistics Asso., 1982.
- 17) Physical Education Bureau, Ministry of Education: *The Survey Report of Physical Fitness and Motor Ability of 1979*, 1979.
- 18) Montoye, H. J., Van Huss, W. D., Olson, H. W., Pierson, W. R. and Hudec, A. J.: *Longevity and Morbidity of College Athletes*, Indianapolis, Phi Epsilon Kappa Fraternity, 1957.
- 19) Montoye, H. J., Van Huss, W. D. and Nevai, J. W.: *Longevity and Morbidity of College Athletes, A Seven-Year Follow-up Study*, J. Sports Med. and Physical Fitness, 2(3): 133-40, 1962.
- 20) Inf. Bureau of the Premier Secretariat: *A Survey of Public Opinion Concerning Physical Fitness and Sports*, 1977.
- 21) Nakamura, H.: *Obesity and Hypertension*, Health Science, 19(5): 290-92, 1977.
- 22) Human Factors Research Institute Co.,: *Standardization of Health Measure and Individual Measurement*, 1981.
- 23) Oda, M.: *Gaining Weight*, Popular Medicine, 5: 24-29, 1965.
- 24) Ogawa, S., Furura, Y., Nagai, N., Yamamoto, K. and Minobe, K.: *Survey on the Health of Toshiyori (Retired Sumo Wrestlers)*, Bulletin of Institute of Sport Science, The Faculty of Physical Education, Tokyo University of Education, 11: 1-14, 1973.
- 25) Polednak, A. P. and Damon, A.: *College Athletics, Longevity, and Cause of Death*, Hum. Biol.,

- 42: 28–46, 1970.
- 26) Pront, C.: *Life Expectancy of College Oarsmen*, J. A. M. A., **220**(13): 1709–11, 1972.
- 27) Rook, A.: *An Investigation into the Longevity of Cambridge Sportsmen*, British Medical J., April **3**: 773–77, 1954.
- 28) Schnohr, P.: *Longevity and Causes of Death in Male Athletic Champions*, the Lancet, December, **18**: 1364–65, 1971.
- 29) Suzuki, F.: *A Survey Concerning the Judgment of Somatotype and Physique by Sheldon's Triangular Geometrial Form Method*, Japanese J. of Physical Fitness and Sports Medicine, **7**(1): 19–39, 1958.
- 30) Suzuki, S.: *The Effectiveness of Nutrition and Physical Exercise at the Developing Stage*, Japanese J. of physical Fitness and Sports Med., **10**(3): 109–12, 1968.
- 31) Yoshimura, S.: *Arteriosclerosis of Aged Runners*, The Reports of International Sports Medicine Symposium for Aged Runners, Nippon Tuttle Co., 24–30, 1976.