

## The Study of Functional Strength Alteration of Senior by Customized Senior's Health Athletics Service

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**Abstract.** The main purpose of this research was to comprehend the utility of a welfare program, 'prescribed sports service for the elders' by applying the sports preventing-treatment service that is based on physical activity, and to investigate the effects on the functional physical fitness. The subjects of the investigation were elderly women above the age of 60, and we imposed the prescribed sports with about 20 yoga instructors, 20 dancers, and 20 sports massage, and observing the effects on physical fitness prior and after the prescribed sports. The results include the muscular strength of the upper limbs, flexibility of the lower body, and agility improved for the yoga-ists, dancers, and sports massagers, and there were some differences between them as well. Therefore, prescribed sports that reflect the characteristics of physical fitness improve the functional fitness in general, and managing an independent daily life is ultimately affected positively.

**Keywords:** elders, prescribed sportservice, functional fitness, effects of preventing-treatment

### 1 Introduction

The populations of elders are rapidly increasing worldwide. South Korea is currently experiencing the most rapid transition into an elderly society, and the public interest on senescence is rapidly increasing on a personal, social, and national aspect. Older women are especially at a disadvantage as of health and possible support compared to older men, but they usually have a longer life-expectancy, making improvement and interest necessary. Various problems arise economically, physically, and emotionally as the senescence is becoming longer in an individual's lifetime. However, the most important out of all is a problem of health due to weakening of physical ability and diseases. 80% of health problems in the senescence can be prevented or postponed through healthy actions and changes in one's lifestyle. Exercising regularly and the proper amount of physical activity will not only impede the process of reduction of physical strength, but also up step one's physical fitness. Therefore, choosing important elements of physical fitness and consistently exercising are essential. These days, investigations on physical activity and health are increasing in number and the attempt to improve an elder's health has also been increasing

through a regular and systematic movement. Especially, the 'prescribed sport service for the elderly' that is operated by a national support and partial individual pay, is for the purpose of improved health and rehabilitation, and is offered for elders over the age of 65, and provides various customized sports programs and helps obtain a healthy senescence through constant health care.

Many organizations are enforcing the 'prescribed sportservice for the elderly'. However, for the effectiveness of expense and consistent performance of exercise, various aspects such as the health condition, exercise intensity, total amount of exercise, psychological effects, and the environment should be considered. Additionally, a sportservice that is not restricted by facility, space, and finance is necessary. This ultimately controls the effectiveness of 'prescribed sportservice for the elderly', and various investigations for the method of prescribed sports are needed. Therefore, this investigation took the desires of the elderly of a local society to concern and applied prescribed sports program to elders by type and investigated the effects on functional fitness that are directly related to their health.

## 2 Method of Study

The subjects are residents of Youngdo Gu, Busan metropolitan city, that are over the age of 60, and whose average monthly incomes are below 120%. The subjects are primarily chosen for their access to basic supplies supported by the nation, or whether the elders contain the factor of social danger or not. Individual's interest, daily pattern, and health condition were investigated and picked 20 yoga-ists, 20 dancers, and 20 sports masseuse out of older women that comprehended the purpose of the program and desired a prescribed sportservice that is based on physical activity. The program was done in 3 social service institutions in 3 groups, from April to December, twice a week, one hour each, in total of 72 sessions.

The method of measuring a subject's functional fitness was done by adjusting the senior fitness test manual. The measuring topics were muscular strength of the lower body, muscular endurance, overall flexibility, and agility, and were done with chair stand test, arm curl test, modified sit- and- reach test, back scratch test, 2.44m up and- go test.

The types of sports program customized for the elderly were yoga, dance, and sports massage. The intensity of exercise were accomplished by personal trainers' advice depending upon individual physical ability, but were above the medium intensity, and the intensity was set for a safe scale of 11-13 of RPE (rating of perceived exertion (Borg scale)). The amount, frequency, and term of exercise were twice a week, one hour each, for 36 weeks.

All data was calculated for the average (M) and standard deviation (SD) through the use of SPSS Ver. 19.0. Two-way repeated ANOVA analysis was done to verify the difference between time and group, and the effect of the interaction between time and group. Statistical essential level was set to be 0.05.

### 3 Results and Conclusion

In this research, prescribed sports service program that is physical activity oriented was applied to the elderly through 3 types: yoga, dance, and sports massage, to investigate the utility of prescribed sports and the effects on the functional fitness. The subjects of this research are 60 women that are residents of Y Gu and are over the age of 60, and were separated to 20 yoga ists, 20 dancers, and 20 sports massagers. The program was done twice a week, one hour each, in total of 36 weeks and 72 sessions, with the intensity of RPE 11-13, and the effects on functional fitness were observed.

The detailed topics of functional fitness are chair stand test, arm curl test, modified sit-and-reach test, back scratch test, 2.44 m up-and-go test, and the results are as follows.

Yoga-ists, dancers, and sports massagers had improved muscular strength, flexibility, and agility, and differences between the different types existed. Muscular strength and muscular endurance in the lower body, muscular strength and muscular endurance in the upper body, flexibility in the lower body, and agility were the most improved in the order of yoga, dance, and sports massage. Flexibility of upper body was improved in the order of yoga, sports massage, and dance. These results may differ by the area of measurement, they seem to be matching with the results of former investigations that state that the sports service program affect the elders' functional fitness positively. Prescriptions of sports program that reflect the characteristics of physical fitness of elderly generally improve the functional fitness of elderly, affecting the maintenance of independent daily life positively. Therefore, if various types of activities are applied and done regularly, daily life and later years will be able to be led. Also, the less the income of the older women, the harder to participate consistently and in the long-term, making various programs in a local society necessary. Additionally, Yoga field has seemed to be the most effective out of all the various programs. Prescribing Yoga is the most adequate because it is not as harsh on the elders' bodies for its low intensity, but is very effective in a emotional and mental aspects. Therefore, understanding the elders' physical and physiological characteristics, and developing the segmentalized prescribed sports program into more details is necessary in a local society to improve elders' quality of life.

This investigation is significant for obtaining basic data about the 'prescribed sports service for the elders' in a more useful way through comparing different exercises and their effects. Therefore, we have procured a manual for a more standardized prescribed sports service program to use when the local elders are in an internal situation.

## References

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