

## Exploring the Necessity and Limitations of Exercise Rehabilitation Experts in the Dementia Relief Center in Korea

Seonghyeon Jeong<sup>1</sup>, Jiyoun Kim<sup>2</sup>, Ahra Oh<sup>3</sup>, Eunsurk Yi<sup>4</sup>

<sup>1</sup>Department of Exercise Rehabilitation and Welfare, Gachon University, Korea (bsc9606@naver.com), First Author

<sup>2</sup>Department of Exercise Rehabilitation and Welfare, Gachon University, Korea (eve14jiyoun@gachon.ac.kr)

<sup>3</sup>Exercise Rehabilitation Convergence Institute, Gachon University, Korea (oh-yang0329@hanmail.net)

<sup>4</sup>Department of Exercise Rehabilitation and Welfare, Gachon University, Korea (yies@gachon.ac.kr)

Corresponding Author

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### ABSTRACT

The purpose of this study is to explore the necessity and limitations of dementia exercise rehabilitation experts in the domestic dementia relief center. In recent years, the dementia relief center is expanding, and according to several previous studies, it is effective to apply exercise to the dementia risk group and early dementia patients. However, there are currently no experts in dementia exercise rehabilitation with in the domestic dementia relief center, and alternatives are being used to replace them. So we conducted research based on this. We conducted the study using two methods. The first is an analysis of 5 previous studies, and the second is to conduct interviews with three domestic dementia relief centers. First, the main contents of the 5 previous studies are the effect of exercise on dementia, the current status of the dementia relief center, and the necessity of a dementia exercise instructor in the dementia relief center. Based on this, interviews were conducted on three domestic dementia relief centers, and the contents of programs, instructors, certifications, participation rates, and facilities within the dementia relief center were found. In conclusion, we could know the necessity of a dementia exercise rehabilitation expert in the dementia relief center, and for this, it is necessary to establish a certificate of a dementia exercise rehabilitation specialist, a new professional training course, and a new professional educational institution.

## 1. Introduction

According to the Central Dementia Center under the Ministry of Health and Welfare, about 750,000 people with dementia were among the elderly people over 65 in Korea in 2018. In addition, it is predicted that the number of elderly dementia patients will reach 800,000 by 2020 (Central Dementia Center, 2018). Accordingly, the current government has established and implemented the national responsibility system for dementia as an alternative. The national responsibility system for dementia

includes expansion of dementia support centers, establishment of a dementia relief hospital, introduction of an upper limit system for long-term care insurance for the elderly, the application of health insurance for 90% of dementia medical expenses, improvement of the treatment of nursing care workers, and professional nursing care for dementia patients. Contents such as the introduction of a system to be dispatched are included. Among them, through the expansion of dementia support centers, many dementia relief centers are open nationwide. The Dementia Relief Center aims to contribute to the happiness of the patient's own and family's quality of life by preventing dementia from worsening by preventing dementia or diagnosing dementia at an early stage. It is selected and operated according to the judgment of the person in charge of operation and the necessary situation (Dementia safety center project information, 2017).

On the other hand, there are largely drug and non-drug treatment methods for treating dementia, but the single drug treatment method cannot be called a fundamental treatment because it may involve various side effects. Non-drug treatment methods include cognitive training, memory training, cognitive rehabilitation therapy, realism training, occupational therapy, music therapy, horticultural therapy, and exercise. Among these non-drug treatments, exercise, especially when combined with drug treatment, can improve the quality of life by prolonging the duration of mild dementia by preventing the morbidity of moderate dementia and reducing the progression rate of dementia (Kang et al., 2015).

It has been reported that  $A\beta$  concentration is significantly reduced in the PS2 Gene (A model of AD; AD-Type dementia experiment rat) group who performed treadmill exercise for 3 months, and such exercise could be a useful treatment for AD-Type dementia patients (Cho et al., 2003). As such, regular exercise not only delays the onset and progression of dementia in the elderly, but also improves negative factors related to dementia such as risk of falls and fractures, loss of muscle endurance, and cardiopulmonary decline, and improves daily life performance and plays the role of depression (Hong, 2014). Additionally, according to brain and blood-related studies, Korean dance, yoga, full body vibration, aerobic, aquarobic, flexibility, balance exercise, elastic band exercise, and walking were applied to the dementia elderly. The concentration was improved, the pulse wave velocity decreased, and the brain function index improved (Kim et al., 2017).

Existing studies show that exercise is effective in preventing dementia and is effective in early patients with dementia. Therefore, it can be said that an exercise program for dementia is essential. In addition, since it is more effective if exercise is practiced in the long term, it can be said that the time of day is also an important issue (Kim et al., 2017).

In order to apply exercise to dementia elderly people, along with a program, a leader who can understand their health status and give customized guidance is needed. However, instead of such an exercise leader specializing in dementia, a sports instructor for the elderly or an instructor with other corporate judicial licenses takes the role.

In Korea, "elderly sports instructors" are selected every year, who grant qualifications according to the Enforcement Decree of the National Sports Promotion Act. According to Article 2 (Definition) Article 10 of the Enforcement Decree of the National Sports Promotion Act (President Decree No. 25947, partially amended on December 31, 2014, and enforced on January 1, 2015), the elder sports instructor said, "The physical and mental changes of the elderly it refers to a person who

has knowledge of such things and instructs the elderly in life sports for eligible items”. Such an opportunity for the elder sports instructor license to emerge is the rapid increase of the elderly population and the resulting entry into an aging society. With the creation of a sports instructor for the elderly, it has become possible to provide sports services suitable for the elderly who wish to play sports (Bae & Lee, 2017). However, there is a limit in providing exercise for the elderly with dementia as no specialized education for the elderly with dementia is provided in the examination subjects or training courses for the elderly sports instructor.

At present, the dementia relief center in Korea, which provides exercise for the health of the elderly with dementia, is also running an exercise program by a nationally qualified senior sports instructor or other licensed exercise prescriber. Although they have knowledge of general elderly exercise guidance and rehabilitation, they are having difficulty in providing appropriate education for the subject because there is no curriculum related to dementia in the process of obtaining qualifications for elderly sports instructors or exercise prescriptions. In order to solve this problem, it is necessary to add a curriculum for dementia, which requires a national approach (Kim et al., 2008).

In addition, although the government provides support for living sports for the elderly, it is questionable whether the elderly sports leaders are serving as tailored leaders to the elderly. There is a need to continuously discuss whether it is undergoing sufficient education and training courses (Lee et al., 2019).

Therefore, the purpose of this study is to explore the necessity and limitations of dementia elders movement experts by grasping the actual state of programs and leaders through literature research and in-depth interviews with experts related to the dementia relief center.

## 2. Research Method

In this study, the research was conducted through a literature review method of reviewing and analyzing previous research data, and by visiting three domestic dementia relief centers directly or by sending e-mail. The procedure of the study is shown in <Figure 1>.

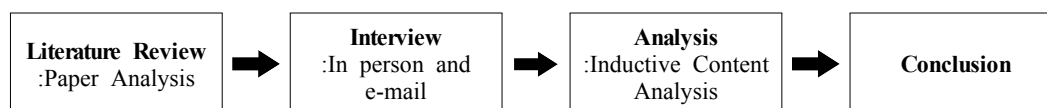


Fig. 1. Research Procedure

### 2.1 Literature Review

In order to select literature data suitable for the purpose of this study, the Korean studies Information Service System (KISS) and the Research Information Sharing Service (RISS) were used, which are databases for searching domestic academic papers. For literature search, domestic and foreign literature was searched mainly for 2003-2019, and keywords were selected as dementia, exercise, dementia

relief center, and elderly sports instructor. Based on the above criteria, a total of 1,367 literature data were searched. In order to explore the existence, necessity, and limitations of dementia exercise rehabilitation experts in the domestic dementia relief center, we searched for papers containing the keywords of the current status of exercise programs in the dementia relief center and the status of dementia exercise experts and elderly sports instructors. I was able to find 5 papers. The selected literature was analyzed and interview questions were written based on the main contents of the thesis.

## 2.2 Field Expert Interview

### 2.2.1 Research Target

The interview was conducted with the person in charge of the exercise rehabilitation program at the institution. The characteristics of the study participants are shown in Table 1.

**Table 1.** Characteristics of Research Participants

Name	Gender	Agency	Responsibilities	Career Period	Remark
A	Male	A Institution	General Executive	3 years	Occupational Therapist
B	Female	B Institution	General Executive	5 years	Occupational Therapist
C	Male	C Institution	General Executive	4 years	Occupational Therapist

### 2.2.2 Interview Method and Questionnaire

Institution A and B are located in Incheon, and Institution C is located in Suwon, Gyeonggi-do. Institution A and B, where field expert interviews were available, visited the institution in person to conduct interviews, and institution C, which was not able to visit in person, conducted research through email. When obtaining the information necessary to conduct the research after the interview, additional information was obtained through telephone and e-mail without revisiting to simplify the procedure.

In addition, the semi-structured open questionnaire was used for the interview, and the contents of the main questions are shown in Table 2.

**Table 2.** Main Question Content

Number	Questions
1	Is your institution currently running an exercise rehabilitation program?
2	What is the type of exercise rehabilitation program in the institution?
3	Who runs an exercise rehabilitation program?
4	What is your preference for exercise rehabilitation program?
5	What are some things that need to be improved?
6	Do you feel the need for a dementia exercise rehabilitation specialist in your institution?

### *2.2.3 Interview Analysis Method*

In this study, through inductive content analysis, keywords were selected based on the interview content, and similar subjects were grouped together, followed by sub-classification, medium classification, and large classification. As a result, it was organized into 3 major categories, 5 medium categories, and 20 sub categories.

Among the qualitative research methods, data analysis was conducted based on the triangular verification method. Through repeated reading of the contents through one researcher and one doctoral degree holder, similar contents were found, and then the work of grouping them for relevance was proceeded.

The following process was taken to secure reliability and validity. First, one researcher and one doctoral degree holder encoded each data. Data were analyzed through this coded data. After that, the contents of the interview were reconfirmed with the program manager of the participating institution to ensure the reliability of the interpretation. Finally, one doctoral degree holder gave feedback on the overall interview.

## **3. Results**

### *3.1 Dementia Relief Center's Exercise Program and Current Status of Leaders*

The Dementia Relief Center is established in Article 17 of the Dementia Management Act (Establishment of the Dementia Relief Center), revised in 2018 after the announcement of the “National Responsibility Plan for Dementia” by the Minister of Health and Welfare in September 2017, and Article 8 of the Enforcement Rule of the Act (Dementia Relief Center It is installed and operated nationwide based on the facility and manpower standards of each local government) was chosen (Dementia Policy Project Guide, Ministry of Health and Welfare, 2018). Since 2007, it has been sequentially opened in 25 districts of Seoul over two years, and it is operating projects such as early dementia screenings, medical expenses support, and dementia support social resources reinforcement. It is a related professional service organization (Park et al., 2019). In addition, the Dementia Relief Center is carrying out various projects such as early dementia examination, counseling and registration management, dementia family support business, and shelter operation for dementia patients and their families.

If dementia patients exercise regularly, cognitive function improvement can be obtained (Um & Kwak, 2004). Because exercise is effective for dementia patients, various exercise programs are being conducted within the Dementia Relief Center (Seoul Dementia Relief Center, 2020). <Table 3> shows the exercise programs being conducted at the Dementia Relief Center in Seoul. In the case of the Dementia Relief Center in Gangdong-gu and Seocho-gu, it can be seen that the exercise program is divided into groups according to the condition of the dementia patient. Therefore, it can be said that an understanding of the condition of a dementia patient is essential, and an instructor based on this understanding should lead the exercise program.

**Table 3.** Seoul Dementia Relief Center Exercise Program

Region	Exercise Program
Gangnam-gu	self-myofascial release, walking exercise, meditation pilates, Sumobi, Pillar over Flowers
Gangdong-gu	cognitive health program (divided into dementia, high risk of dementia, and normal)
Gangseo-gu	exercise class, brain exercise, couple fork dance, Happy Youth, Memory Keeper, pilates
Gwanak-gu	cognitive health center program (exercise therapy)
Gwangjin-gu	Elegant Happy Pure brain class (exercise therapy)
Geumcheon-gu	living gymnastics class
Nowon-gu	dementia prevention class (exercise class)
Dobong-gu	dementia prevention class (Brain exercise Class)
Dongdaemun-gu	dementia prevention program (memory protection class)
Seocho-gu	Medi-dance (divided into high risk group and dementia group)

Source: Seoul Metropolitan Dementia Center

In order to cultivate dementia-specialized exercise instructors, tasks as shown in <Table 4> are required (Kim et al., 2008). As such, if a dementia expert exercise instructor is trained, customized exercise guidance for dementia patients within the dementia relief center will be possible.

**Table 4.** Contents of Core Work of Dementia Expert Exercise Instructor

Duty	Work
Understanding of the Elderly with Dementia	Building knowledge of the concepts and types of dementia Learning how to deal with dementia Running a counseling program for families with dementia
Program Planning	Identify your goals Choosing a topic
Program Development	Identifying subject characteristics Choosing how to operate an exercise program Prepare and create textbooks Making alternative programs in case of emergency
Program Run	Early dementia exercise Middle-term dementia movement Movement of the elderly with terminal dementia
Program Evaluation	Deciding how to evaluate Reflecting evaluation results
Professional Development	Building knowledge about aging Knowing about senior diseases Understanding elderly physical welfare Developing physical performance for exercise guidance Developing communication skills Equip first aid skills Developing program planning skills Develop your specialty

### 3.2 Analysis of Prior Research on Exercise Environment of Dementia Elderly

Five previous studies related to the exercise environment of the elderly with dementia were found

in Korea and the main contents were analyzed. Although most of the studies are conducting exercise programs for dementia patients, there are currently no dementia exercise rehabilitation experts in the Dementia Relief Center. There is a situation(Kim et al., 2008). Representatively, the sports instructor for the elderly is a manpower who guides life sports for the elderly. In order to obtain a license for an elderly sports instructor, you must fully understand written subjects such as physical education for the elderly, sports psychology, exercise physiology, exercise mechanics, and sports education. Through the certificate acquisition process, students learn very basic contents related to dementia, but there is a limit to learning specific contents such as understanding according to the degree of dementia. There is no elder exercise instructor specializing in dementia in the qualification category, and only 58 sports are composed(Korea Sports Promotion Corporation, 2020). Therefore, it is difficult to expect a sufficient understanding of dementia patients through the process of obtaining a license for the elderly sports instructor.

Nevertheless, in order for an elderly sports instructor to teach the elderly with dementia, it requires a lot of professional knowledge and experience on dementia. The reason why leaders need expertise is that the elderly often have diseases differently from other age groups due to their physical characteristics(Bae et al., 2015). If guidance is made without understanding these characteristics, it will be difficult to guide the general elderly, and furthermore, the expertise to guide the elderly with dementia will decrease. Therefore, I think there is a need for an exercise instructor specializing in dementia who can overcome the limitations of the sports instructor for the elderly. The analyzed contents are shown in Table 5.

Table 5. Literature Analysis Results

Author	Title	Main Content
Kim, H. S.	The Study on Education Course for Exercise Instructors for Dementia by DACUM Job Analysis	Although exercise guidance for the general elderly is being carried out a lot, there is no exercise guidance for the elderly with dementia, so the aim was to develop a systematic and effective training curriculum centering on the duties that an exercise instructor specialized in dementia should perform.
Kim, S. Y.	The Application of Exercise Program and the Improvements for Prevention and Treatment of Dementia	Currently, exercise programs within the dementia support center and daycare center are operated autonomously for each center. However, the individualized programs required for the dementia group and the provision of exercise time appropriate to the subject are insufficient. One of the reasons for this is the absence of professional instructors. Therefore, it is necessary to develop professional organizations and effective exercise programs for the training and placement of professional leaders, and related matters must be institutionalized.
Bae, J. Y.	A Case Study regarding the purpose of obtaining qualification for senior sports instructors, prospect of the occupation and the occupational stability	As a way to reinforce expertise in teaching the elderly in the field, the elderly sports instructor license is being acquired.
Bae, J. Y.	A qualitative case study about the problem and improvement of senior sports instructor's training program.	The problems of the elderly sports instructor training program were 'lack of discrimination and concreteness', 'lack of in-depth education by sport', 'not securing the field', and 'question about the educational effect and effectiveness'. The improvement measures for the problem appeared as 'systematic and detailed in-depth education' and 'practical education contents and lectures by field experts'.

Author	Title	Main Content
Lee, K.	A Network Analysis on the Core Competencies of Sports Instructors for Elderly	There are difficulties or inconveniences that the trainees who participated in the training of the elderly sports instructors experience in field practice. In order to solve these problems, it is necessary to strengthen the educational curriculum. Through this, it is expected to help solve social issues related to the health of the elderly by providing qualitatively improved classes to the elderly.

### 3.3 Qualitative Survey Analysis Results

Institution A, located in Incheon, responded that the exercise rehabilitation program is currently being implemented and that the program to improve physical function is conducted three times a week. Those who lead the exercise rehabilitation program hold the senior sports instructor license. The leader is an external instructor belonging to a local sports association who majored in Taekwondo. Participation rate of exercise rehabilitation programs in institution A is very high, and users are said to have high autonomy when it comes to participation in the program rather than receiving a separate application for the program. On the other hand, the practitioners of Institution A responded that it seems that it is causing confusion because there are many certifications related to physical education at present, and in the direction of being integrated into a single national license that can prove that they can exercise professionally for dementia patients. They suggested that it would be improved. It is said that the need for a dementia exercise rehabilitation specialist is felt because there is a shortage of personnel who have been trained professionally on dementia.

The following is an interview with Institution B located in the regional district of Incheon. In institution B, an exercise rehabilitation program is currently being implemented and is conducted once a week. Users' preference for exercise rehabilitation programs is high. The program consists of dancing, playing ball, and exercising using a thera band. Currently, in Institution B, like Institution A, external instructors conduct the program. The external instructor is an exercise prescriber, an employee belonging to the local sports association, and the institution conducts the program in the form of volunteering. On the other hand, Institution B pointed out the fact that non-professionals in the exercise such as occupational therapists and social workers due to frequent absences of instructors took over the program. Due to these problems, a full-time dementia exercise rehabilitation expert was needed.

Finally, this is an interview with the C institution located in Suwon. Institution C is also implementing an exercise rehabilitation program, and occupational therapists and social workers are conducting cranial nerve exercises and dementia prevention exercises. The users in the institution C responded that their preference for the exercise rehabilitation program was moderate, and the problem was that the exercise rehabilitation program was limited due to the narrow space in the institution. Meanwhile, Institution C responded that it felt the need for a dementia motor rehabilitation expert in the institution to organize a more professional and systematic program. Institution C expressed its intention that it would be desirable for experts to organize and conduct exercise treatment programs for patients with mild dementia. The contents of the interviews of the study participants are shown in Table 6.

**Table 6.** Current Status of Each Institution for Exercise Rehabilitation Programs

	A Institution	B Institution	C Institution
Exercise Rehabilitation Program Progress	proceeding	proceeding	proceeding
Form	physical function improvement program (Tai Chi, dementia prevention gymnastics)	dance, ball play, exercise using thera band	brain exercises, dementia prevention gymnastics
Leader	external instructor	external instructor	occupational therapist and social worker
Preference	very high	high	average
Problem	Insufficient manpower of exercise experts with specialized knowledge on dementia patients	Social worker or occupational therapist acting on behalf of external instructors due to frequent absences	Lack of professional manpower to organize and conduct exercise treatment programs for patients with mild dementia
Improvements	the need for a certification	the need for a full-time instructor	deploy professional manpower, improve narrow space
The Need for Dementia Motor Rehabilitation Experts	need	need	need

Table 7 shows the current status, problems and improvements of the Dementia Relief Center analyzed based on the interview contents.

**Table 7.** Current Status, Problems and Improvements of the Dementia Relief Center

Large Area	Middle Area	Small Area
Status	Program	physical function improvement program cranial nerve gymnastics dementia prevention gymnastics dancing ball thera band exercise
	Instructor	external instructor belonging to the sports club occupational therapist social worker
	License	senior sports instructor
	Participation Rate	very high high average
Problem	Facility	narrow space
	Instructor	instructor's absence
	License	no license for dementia exercise
Improvements	Program	systematic program
	Instructor	instructor of exercise program for patients with mild dementia
	License	dementia exercise professional certificate

#### 4. Argument

The incidence rate of dementia in Korea is rapidly changing, and various efforts are being made to prepare for it. As an example of a cold base, the current city council is working on an environment that can prevent dementia and lead a healthy life through the +9.5 Dementia Prevention Movement Research Group. The ultimate goal is to create a campaign policy for dementia patients in Seoul. In order to establish the movement in a policy like this, it is essential to have a professional license that can work at the dementia relief center. For this, it is essential to prepare a certification system in the country and an institution that can cultivate experts, which can be solved by cultivating experts through education at universities specialized in physical education and health, and finally obtaining a license.

Both the A and B Dementia Relief Center located in Incheon and the C Dementia Relief Center located in Suwon, Gyeonggi-do both said that there is a need for a dementia exercise rehabilitation expert. Exercise is essential for dementia patients, and the evidence was suggested, such as pointing out the limitations of unprofessional exercise guidance in exercise guidance such as social workers and occupational therapists. Institution A pointed out that there are a lot of certifications for gym training as a problem, and suggested that it would be desirable to have a national license for exercise rehabilitation for dementia patients.

Currently, there are already elderly movement leaders for all the elderly, but as the senior dementia is rapidly increasing, now a dementia elderly movement leader who specializes in managing dementia is needed. However, training courses are needed to cultivate dementia elderly movement leaders. To this end, it is necessary to properly organize a curriculum for training dementia motor rehabilitation experts within a specialized institution (Kim et al., 2008).

However, there are few educational institutions in Korea that can train experts in dementia exercise rehabilitation. On the other hand, there is a Department of Exercise Rehabilitation and Welfare that combines social welfare and exercise rehabilitation. The advantage of these departments is that they can perform more professional exercise rehabilitation by combining exercise rehabilitation in social welfare institutions. Department of Exercise Rehabilitation Welfare Department can manage exercise programs for health promotion and disease prevention, which social workers in social welfare institutions cannot do. However, it is regrettable that there is currently no specialized curriculum for dementia patients, so there is no advancement of the dementia relief center as an exercise rehabilitation expert. If a new curriculum for dementia is established in specialized institutions in physical education and health-related universities, it will be helpful to serve as an educational institution to cultivate dementia exercise rehabilitation experts.

#### 5. Conclusion and Suggestions

This study conducted a systematic review of the literature on dementia and exercise and interview analysis with three domestic dementia relief centers to explore the need and limitations of exercise rehabilitation experts in the domestic dementia relief center. As a result, through a systematic review

of the literature, the current state of exercise programs in the domestic dementia relief center, the actual conditions and limitations of exercise program instructors, and the need for a dementia exercise instructor were derived. Through interview analysis, problems such as exercise programs, instructors, licenses, and facilities were found, and they responded that a dementia exercise rehabilitation expert was needed in the dementia relief center. A common problem obtained through literature review and interviews is the absence of a dementia movement instructor, and to solve this problem, the results were derived that institutional changes such as the establishment of a license related to dementia movement and the organization of specialized curriculum were necessary.

However, the fact that there are three survey targets, that only domestic studies have been applied, and that it is not possible to analyze what is needed for dementia patients and dementia families can be seen as insufficient.

Based on this study, more diverse regional and international research cases will be explored, and interview analysis research will be conducted for practitioners in the dementia relief center, external instructors who lead exercise programs in the institution, experts related to exercise rehabilitation, dementia patients and their families. I think that if we secure credibility and specific grounds, we will be able to lay the foundation for cultivating dementia exercise rehabilitation experts in the domestic dementia relief center. It is expected that this study will serve as the basis for preparing the institutional framework for the placement of dementia elderly movement experts in dementia-related institutions such as the Dementia Relief Center.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

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