J Int Acad Phys Ther Res 2011; 2(2): 267-343
ISSN 2092-8475
www.iaptr.org
http://dx.doi.org/10.5854/JIAPTR.2011.2.2.308

The Effects of Handicraft Activities on Hand Promptness and Grasp in the Elderly

The purpose of this study was to investigate the influence of handicraft activities on hand promptness and grasp in the elderly. Subjects were comprised of 14 senior citizens between the ages of 70-85, with 7 subjects in the experiment group and 7 in the control group. Subjects in the experiment group practiced various handicrafts twice a day, while those in the control group did not participate in any special activity. The Jebsen Taylor Hand Function Test was used to evaluate the results, while a dynamometer and pinch gauge were used to measure hand promptness and grasp. The 7 senior citizens in the experiment group were able to increase their hand promptness and grasping skills. Conclusively, handicrafts can help improve hand promptness and grasp in the elderly. Furthermore, the development and improvement of such skills can have a positive influence on the daily lives of senior citizens. Such skills are expected to improve the overall neuro-function in the elderly population.

Key words: *Skill; Beads Craft; Promptness; Grasp*

Jung Sook Lee[a], Kyung Ok Noh[a], Bo Kyoung Kim[b], Wan Suk Choi[b], Sang Min Lee[c], Ok Kon Moon[d], Joo Hyun Park[d], Sung Won Kim[b]

[a]Dongju College, Busan; [b]International University of Korea, Jinju; [c]Hyoja Hospital , Yongin; [d]Kunjang College, Gunsan, Korea

Received : 13 July 2011
Accepted : 18 October 2011

Address for correspondence
Sung Won Kim, PT, Ph.D
Department of Physical Therapy, International University of Korea, san 270 Sangmun-ri, Munsan-eup, Jinju, Korea
Tel: 82-55-751-8293
E-mail: johnskim@hanmail.net

INTRODUCTION

Geriatric research has been increasing in recent years(1). In Korea, the ratio of citizens over the age of 65 was 7.2% in 2000, signifying Korea's entrance into an aging society. In 2007, that ratio was 9.9%, or roughly 4.81 million, and it is expected to rise to 14.3% by 2018 and 20.8% by 2026(2).

This increase in senior citizens presents a serious problem in Korean society. In order to alleviate the effects of an aging society, we must encourage senior citizens to participate in society, help them maintain a good level of health, and promote an overall feeling of confidence that they can live as appreciated members of our society(3).

Human hands are a special, complicated structure of the body and are essential in gathering information and interacting with the environment. Rather than developing as a separate system through repeated experiences, they improve function gradually along with maturation of the neural and musculoskeletal systems. The hands are the most important part of the human body when it comes to motions required for activities of daily living and occupational skills. Functional improvement differs according to each individual's lifestyle. The ability to control strength allow hands to gently touch or firmly grasp objects, and adjust their movements as needed to handle objects of different sizes and weights. Humans also show a tendency to favor one hand over the other, allowing us to differentiate between the dominant hand and non-dominant hand(4). It is also important to measure the degree of asymmetry between the dominant and non-dominant hand(5).

Humans are the only species in the animal kingdom to have opposing thumbs. This characteristic is the starting point behind brain development. Hand-eye coordination, such as that needed to pick up objects to examine them, improves balance between different areas of the cerebrum. This improves complexity in the neuron network in the cerebellum.

Therefore, a major part of the cell structure in the cerebrum is related to touch, as well as neural activity in the fingers. Developing finger dexterity or even maintaining it at a certain level helps improve brain function. Moreover, improvement of hand dexterity has been shown to promote development of new synapse networks in the cerebrum.

However, although practicing hand movements strengthens neuron networks, current research has been limited to very simple patterns of movement such as using an pressure monitor or holding a pen. Hand exercises using a single tool are useful when the goal is to promote conscious movement, however, they do have the disadvantage of being extremely difficult to apply to all adult men and women to need rehabilitation. Children and seniors who are not used to using such tools especially require much direction from the therapist, making it hard for them to do exercises independently. In other words, there needs to be a way to encourage development of cerebral function through promotion of hand function exercises only. If and when such a method is developed, it will be possible to develop brain function regardless of the environment or tools available. This will be helpful to both clients and those who do not require rehabilitation, as well as seniors who are at high-risk for developing Alzheimer's disease.

Handicrafts require special skills from seniors who have decreased hand function, and especially require skills of the fingers(6). One advantage of handicrafts is that clients can use items found in nature or manufactured at minimal costs to build and complete objects, and learn that this process of completion is also possible to achieve in day to day life. Handicrafts also help rehabilitation through development of cerebral function via hand movements(7), as well as being more effective in functional recovery compared to physical exercise or other occupational therapies(8). Handicrafts include activities such as sewing, rug making, beadwork, mosaic, leatherwork, woodwork, metalwork, and origami. Origami is especially useful because one can create a variety of shapes without cutting the paper, as well as put together several smaller pieces to create images of plants, animals and even create three-dimensional works. Origami paper is an easily accessible, non-toxic, and low-cost material that will not affect clients with respiratory conditions, and it can be done sitting comfortably and with minimal exertion, making it useful for those with cardiac conditions as well(7). Rug making cultivates patience through tying knots one at a time, and helps improve finger elasticity through paced and delicate movements. It is also easy to do, making it a good activity for encouraging feeling of achievement. Beadwork requires a great level of movement skill. It involves very little resistance and is therefore appropriate for clients without endurance or those with conditions resulting in sensitive or weak joints, such as Rheumatoid arthritis. Clients can enjoy making simple beadwork decorations for their grandchildren or friends. Beadwork can be done in a variety of levels, making it possible for clients of all cognitive levels to participate. Clients suffering from depression or cognitive damage due to mental disorders can follow simple and repetitive patterns. Clients can choose the color, pattern, and style of the craft, resulting in control and independent decision making skills. Beadwork is easy to do and easy to give as gifts to others, improving feelings of social participation. Of the physical functions, upper body and hand function are the most important for doing activities of daily living(9).

Performed a study of geriatric hand function using subjects aged 24-87 years old. The results showed that hand muscle strength decreased with age and hand function declined after 64 years, with a significant difference after 75 years of age(10). Using Jebsen hand function evaluation on seniors aged 60-94, reported that older subjects took longer to complete the evaluation tasks(11).

This study was performed to investigate the effects of handicraft activities on hand promptness and grasping skills in the elderly. It is hypothesized that handicrafts will improve hand function and, in turn, help increase cerebral function and prevent cerebral decline due to age.

METHODS

Subjects

The subjects of this study were 14 inpatients in A Senior's Hospital, Busan, ages 70-85 years. The subjects were equally divided into an experiment group and a control group. The study was conducted over a period of 8 weeks, from August 9 to September 29, 2010. Subjects in the experiment group participated in hand exercises twice a week, for two hour periods each day. Subjects in the control group did not participate in hand exercises.

Measurment

This study utilized origami, rug making, and beadwork. Origami included folding animals, flowers, flower pots, and mobile-making. Rug making included making seat cushions, telephone doilies, and cup doilies. Beadwork included bracelets, neck laces, rings, and hair pins.

Research Tools

The Jebsen-Taylor Hand function Test was used to measure hand promptness, and the Pinch Gauge was used to measure grasp.

Measuring hand promptness

Jebsen-Taylor hand function test(12)

1) Writing

The client is given a black ball-point pen and an unlined, 20.3 x 28cm clipboard.

Four 5x8 inch cards with sentences composed of 24 capital letters are placed faced-down.

The client chooses a card, and it is shown to the client when the exercise begins.

When the client is ready, the examiner flips the card over and gives the signal to begin.

The time that elapses from the start signal to when the client finishes writing the last sentence and puts the pen down is recorded.

The dominant hand is used to write a new sentence in the same way.

2) Card turning

Five 3x5 inch cards are placed in a row 2 inches apart from each other, 5 inches from the edge of the table.

The time that elapses from the start signal to when the client flips over the fifth card is recorded.

The cards do not have to be straight after they are flipped.

The exercise is repeated with the dominant hand.

3) Moving small objects

An empty can weighing 0.45kg is placed 5 inches from the edge of the table.

A clip is placed furthest from the can, and a coin is placed closest to the can.

4) Simulated Feeding

A wooden panel is attached 5 inches from the edge of the table and an empty can is placed in the middle of the panel. Peas, approximately 1cm in diameter, are placed 2 inches apart on top of the can, and a regular-sized teaspoon is placed nearby.

The elapse time from the start signal to when the last pea is heard dropping to the floor is recorded. The non-dominant hand is tested first, and the dominant hand is tested in the same way. When the dominant hand is being tested, the peas are aligned from the middle towards the dominant hand.

5) Checker stacking

A checker piece, 3cm in diameter, is attached to a wooden panel, 5 inches from the edge. Two checker pieces are placed on either side of the fixed piece. The time that elapses from the start signal to the time the fourth checker piece touches the third one is recorded. The dominant hand is tested in the same way as the non-dominant hand.

6) Moving large light objects

Five large, empty cans, each weighing 70g, are placed two inches apart, five inches from the edge of the table. The time that elapses from the start signal to when the last can is placed is recorded.

The dominant hand is tested in the same way as the non-dominant hand.

7) Large Heavy Object

Five large, heavy cans, each weighing 450g, are placed two inches apart, five inches from the edge of the table. The time that elapses from the start signal to when the last can is placed is recorded.

The dominant hand is tested in the same way as the non-dominant hand.

Measuring grasp

Hand strength is the most important factor in achieving hand functions such as pushing, pulling, turning and moving objects without fatigue. Strength is defined as the greatest amount of force the muscles can achieve against resistance.

Strength is generally measured using a dynamometer. Factors such as posture, angle of the joints, loading-dose and speed of movement affect muscle length and strength efficacy, making each measurement different. This is why test conditions and methods must be consistent when measuring strength.

1) Dynamometer(13)

A dynamometer can be used to measure grasp strength, evaluate degree of paralysis or function decline, and understand the potential for completing tasks requiring hand function.

It was invented in 1880 by Sargent. In 1854, Bechtol introduced the Jamer Dynamometer that allowed adjustment of the handle space. It was selected as a tool to measure grasp by the California Medical Association Industrial Welfare and Rehabilitation Council in 1956. It has been used by the American Society of Hand Therapists since 1961.

① Method

Sitting Position : Shoulder Adduction, Elbow Flexion, Forearm Mid Position

The second joint is used to position the dynamometer, and the handle is adjusted according to finger length

Left and right measurements are taken twice, and the higher value is recorded

② Important points

Adjusting the handle properly according to finger length

Posture so that the arm is going away from the side of the body

Wiping the handle free of sweat prior to taking a measurement

2) Pinch Gauge(14)

① Types

Tip pinch

Lateral pinch

Palmer Pinch(three-jaw chuck)

② Method

• Tip pinch

a. The B&L pinch gauge is placed between the thumb and index finger and the pinch gauge is held by the tips of the thumb and index finger (or the thumb and index/middle fingers).

b. Say "Are you ready? Pinch as hard as you can."

c. Instruct the client to pinch hard.

• Lateral Pinch

a. The device is placed between the pad of the thumb and the outer side of the index finger.

b. Say "Are you ready? Pinch as hard as you can."

c. Instruct the client to pinch hard.

• Palmar pinch (three-jaw chuck)

a. The device is placed between the pads of the thumb, index and middle fingers.

b. Say "Are you ready? Pinch as hard as you can."

c. Instruct the client to pinch hard.

Data Analysis

The data from this study was symbolized and analyzed using SPSS 18.0 K. The average and standard deviation were calculated and analyzed in order to measure the differences between the dominant and non-dominant hands, with a significance level of .05. The differences between the dominant and non-dominant hands in the experimental group before and after the test, and the differences between the dominant and non-dominant hands in the control group were calculated.

RESULTS

Evaluation of Hand Promptness

Jebsen-Taylor hand function test

Writing

In the experiment group, results for the non-dominant hand pre and post experiment were 105.39±24.51 and 101.91±24.51, and results for the dominant hand pre and post experiment were 78.01±35.88 and 65.70±30.43, respectively. These results were therefore not significant; however, there was a decrease in the post experiment evaluation compared to the pre experiment. In the control group, results for the non-dominant hand pre and post experiment were 73.57±3.04 and 64.72±13.66, and results for the dominant hand pre and post experiment were 54.20±5.19 and 66.18±11.80, respectively, showing a significant increase in the post experiment evaluation compared to the pre experiment (Table 1).

Table 1. Writing evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	105.39±24.51	101.91±24.51	.097
	dominant hand	78.01±35.88	65.70±30.43	.195
Control group	Non-dominant hand	73.57±3.04	64.72±13.66	.194
	dominant hand	54.20±5.19	66.18±11.80	.027*

* p<.05

Card Turning

In the experiment group, results for the non-dominant hand pre and post experiment were 14.99±3.10 and 14.56±2.89, showing a significant difference ($p<.05$), and results for the dominant hand pre and post experiment were 13.35±3.82 and 12.48±4.45, respectively, showing a decrease post experiment. In the control group, results for the non-dominant hand pre and post experiment were 11.32±2.91 and 10.30±1.71, and results for the dominant hand pre and post experiment were 9.39±2.15 and 10.74±3.44. There was no significant difference in the non-dominant hand; however, there was a slight increase. Compared to the control group, the experiment group showed a greater decrease as well(Table 2).

Table 2. Card turning evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	14.99±3.10	14.56±2.89	.019*
	dominant hand	13.35±3.82	12.48±4.45	.081
Control group	Non-dominant hand	11.32±2.91	10.30±1.71	.185
	dominant hand	9.39±2.15	10.74±3.44	.202

* $p<.05$

Moving small objects

In the experiment group, results for the non-dominant hand pre and post experiment were 12.79±3.93 and 12.00±3.68, showing a significant decrease ($p<.05$). In the dominant hand, pre and post experiment results were 10.40±3.12 and 9.42±2.53, showing a slight decrease. In the control group, results for the non-dominant hand pre and post experiment were 15.59±3.41 and 13.89±2.57, and results for the dominant hand pre and post experiment were 13.22±2.34 and 14.56±3.3.6, showing a slight increase post experiment(Table 3).

Table 3. Moving small objects evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	12.79±3.93	12.00±3.68	.019*
	dominant hand	10.40±3.12	9.42±2.53	.070
Control group	Non-dominant hand	15.59±3.41	13.89±2.57	.054
	dominant hand	13.22±2.34	14.56±3.36	.114

* $p<.05$

Simulated feeding

In the experiment group, results for the non-dominant hand pre and post experiment were 19.86±9.80 and 19.67±10.43, showing a decrease, and results for the dominant hand pre and post experiment were 15.43±3.46 and 14.25±3.70, showing a significant decrease post experiment($p<.05$). In the control group, results for the non-dominant hand pre and post experiment were 14.15±2.41 and 12.63±1.46, showing a significant difference($p<.05$). In the dominant hand, results pre and post experiment were 12.85±3.22 and 12.45±3.18, showing a slight decrease(Table 4).

Table 4. Simulated feeding evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	19.86±9.80	19.67±10.43	.710
	dominant hand	15.43±3.46	14.25±3.70	.019*
Control group	Non-dominant hand	14.15±2.41	12.63±1.46	.037*
	dominant hand	12.85±3.22	12.45±3.18	.489

* $p<.05$

Checker stacking

In the experiment group, results for the non-dominant hand pre and post experiment were 7.86±2.33 and 7.48±2.29, and results for the dominant hand pre and post experiment were 8.36±2.30 and 7.64±2.78, showing a decrease. In the control group, results for the non-dominant hand pre and post experiment were 9.95±1.39 and 8.94±1.95, and results for the dominant hand pre and post experiment were 8.06±1.56 and 8.66±1.09 showing an increase. There was also a greater decrease in the experiment group compared to the control(Table 5).

Table 5. Checker stacking evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	7.86±2.33	7.48±2.29	.086
	dominant hand	8.36±2.30	7.64±2.78	.061
Control group	Non-dominant hand	9.95±1.39	8.94±1.95	.067
	dominant hand	8.06±1.56	8.66±1.09	.451

* $p<.05$

Moving large, light objects

In the experiment group, results for the non-dominant hand pre and post experiment were 7.02±1.76 and 6.91±1.70, and results for the dominant hand pre and post experiment were 6.67±1.24 and 5.70±1.34, showing a slight decrease but no significant difference. In the control group, results for the non-dominant hand pre and post experiment were 8.99±1.14 and 9.03±1.05, and results for the dominant hand pre and post experiment were 7.86±1.41 and 8.54±1.33, showing an increase in both the dominant and non-dominant hand(Table 6).

Table 6. Moving large, light objects evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	7.02±1.76	6.91±1.70	.560
	dominant hand	6.67±1.24	5.70±1.34	.055
Control group	Non-dominant hand	8.99±1.14	9.03±1.05	.928
	dominant hand	7.86±1.41	8.54±1.33	.361

* $p<.05$

Moving large, heavy objects

In the experiment group, results for the non-dominant hand pre and post experiment were 6.87±1.86 and 6.53±1.73, and results for the dominant hand pre and post experiment were 6.42±.83 and 5.28±.68, showing a significant decrease in both the dominant and non-dominant hands($p<.05$). In the control group, results for the non-dominant hand pre and post experiment were 10.63±1.34 and 10.17±1.20, and results for the dominant hand pre and post experiment were 9.48±.96 and 10.11±1.20, showing a slight increase(Table 7).

Table 7. Moving large, heavy objects evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	6.87±1.86	6.53±1.73	.013*
	dominant hand	6.42±.83	5.28±.68	.018*
Control group	Non-dominant hand	10.63±1.34	10.17±1.20	.300
	dominant hand	9.48±.96	10.11±1.20	.229

* $p<.05$

Evaluation of Grasp

Dynamometer

In the experiment group, results for the non-dominant hand pre and post experiment were 6.42±2.27 and 6.68±4.09, showing an increase, and results for the dominant hand pre and post experiment were 7.71±4.09 and 8.85±3.80, showing a very significant difference($p<.01$). In the control group, results for the non-dominant hand pre and post experiment were 4.35±3.39 and 3.85±2.29, and results for the dominant hand pre and post experiment were 5.04±3.50 and 5.00±3.17, showing a decrease(Table 8).

Table 8. Grasp evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	6.42±2.27	6.68±4.09	.885
	dominant hand	7.71±4.09	8.85±3.80	.005**
Control group	Non-dominant hand	4.35±3.39	3.85±2.92	.267
	dominant hand	5.04±3.50	5.00±3.17	.942

* $p<.05$

Pinch Meter

Tip Pinch

In the experiment group, results for the non-dominant hand pre and post experiment were 5.07±2.35 and 5.42±2.82, and results for the dominant hand pre and post experiment were 6.21±3.08 and 7.02±3.26, showing a very significant increase($p<.01$). In the control group, results for the non-dominant hand pre and post experiment were 4.42±2.04 and 4.57±1.53, and results for the dominant hand pre and post experiment were 4.92±1.20 and 5.28±1.41, with neither hand showing a significant difference (Table 9).

Table 9. Tip pinch evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	5.07±2.35	5.42±2.82	.002**
	dominant hand	6.21±3.08	7.02±3.26	.002**
Control group	Non-dominant hand	4.42±2.04	4.57±1.53	.604
	dominant hand	4.92±1.20	5.28±1.41	.140

* $p<.05$

Lateral pinch

In the experiment group, results for the non-dominant hand pre and post experiment were 3.57±2.09 and 4.50±2.59, showing a significant increase (p.<.05), and results for the dominant hand pre and post experiment were 4.42±1.98 and 5.71±2.28, showing a very significant difference($p<.01$). In the control group, results for the non-dominant hand pre and post experiment were 6.57±2.77 and 6.42±3.22, and results for the dominant hand pre and post experiment were 7.78±2.49 and 7.00±2.75, showing a slight decrease in both the dominant and non-dominant hands(Table 10).

Table 10. Lateral pinch evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	3.57±2.09	4.50±2.59	.045*
	dominant hand	4.42±1.98	5.71±2.28	.002**
Control group	Non-dominant hand	6.57±2.77	6.42±3.22	.752
	dominant hand	7.78±2.49	7.00±2.75	.072

* $p<.05$, ** $p<.01$

Palmar pinch (three-jaw-chuck)

In the experiment group, results for the non-dominant hand pre and post experiment were 4.21±1.82 and 4.85±2.19, showing a significant increase ($p<.05$), and results for the dominant hand pre and post experiment were 4.78±1.36 and 5.42±2.47, showing a slight increase. In the control group, results for the non-dominant hand pre and post experiment were 5.71±3.33 and 5.28±2.99, and results for the dominant hand pre and post experiment were 5.50±2.23 and 5.07±2.04, showing a significant decrease in both the dominant and non-dominant hands(Table 11).

Table 11. Palmar pinch evaluation

		Pre	Post	p
Experiment group	Non-dominant hand	4.21±1.82	4.85±2.19	.012*
	dominant hand	4.78±1.36	5.42±2.47	.078
Control group	Non-dominant hand	5.71±3.33	5.28±2.99	.045*
	dominant hand	5.50±2.23	5.07±2.04	.045*

* $p<.05$

DISCUSSION

Despite the increasing aging population and a dire need to understand the importance of hand function in the elderly, few studies to date have been committed to such research. Foreign studies related to hand function in the elderly include topics such as muscles and strength in the hands(1, 15, 16), hand utilization in dependent elderly females(17), and hand function in the dependant elderly(18).

As people grow older, a phenomenon commonly known as 'aging' occurs. Aging is generally thought to start after 40 years of age and those in their 50s experience mild physiological symptoms. As a person moves on to their 60s and 70s, the results of aging may bring on physical handicaps, and 75 is considered completely aged. Hand function decline is a natural part of aging that can result in many restrictions to activities of daily living. Degenerative arthritis, Rheumatoid arthritis, weakening muscles, and hand function decline due to stroke are a few of the main causes.

Hand function is mediated by range of joint motion, muscular strength, and integrated senses. It plays a very broad and important role in day to day living. Some examples of activities requiring hand function include eating, personal hygiene, and putting on or taking off clothing. Without proper hand function, it becomes very difficult to perform tasks such as using a utensil to spoon food or using buttons or zippers on clothing. Needless to say, hand function directly and indirectly influences many aspects of our lives.

It has been reported that providing handicraft activities to post stroke patients can increase their cognition levels. Based on this, many handicraft programs have been made for stroke patients(19), and although specific treatment methods have changed over the years, it is still being actively used to help clients with physical disabilities(20). Along with advancements in neuroscience research, evidence that handicrafts can help clients increase or rehabilitate cerebral function has only become stronger.

This study provided handicraft programs to normal senior citizens aged 70-85 years. Subjects were divided into an experiment group and control group, and effects of the interventions were evaluated through hand function tests. Results showed an increase in hand function in all subjects who participated in handicraft activities.

The Jebsen-Taylor Hand Function Test, used to evaluate hand promptness, is one of the most commonly used hand function tests. It is comprised of 7 areas, making it especially useful in hand function evaluation.

The Jebsen Test is divided into categories of writing, card turning, moving small objects, simulated feeding, checker stacking, moving large light objects, and moving large heavy objects. The present study evaluated subjects two times.

Non-dominant hand function in the experiment group showed a significant difference in card turning, moving small objects, and moving large heavy objects($p<.05$). There were no significant differences in simulated feeding, checker stacking, or moving large light objects. Dominant hand function showed a significant difference in simulated feeding and moving large heavy objects($p<.05$). There were no significant differences in writing, card turning, moving small objects, checker stacking, or moving large light objects.

Non-dominant hand function in the control group showed a significant difference in simulated feeding($p<.05$). There were no significant differences in writing, card turning, moving small objects, checker stacking, moving large light objects, or moving large heavy objects. Dominant hand function showed a significant difference in writing ($p<.05$), and there were no significant differences in card turning, moving small objects, simulated feeding, checker stacking, moving large light objects, or moving large heavy objects.

The dynamometer is a tool that numerically evaluated hand grasp. It uses thumb and the flexors of the remaining extremities. Grasp is affects by posture during examination and positioning of the main joints(21, 22), position of the forearm(23), and positioning of the shoulder joints. The present study used guidelines from the American Society of Hand Therapists: shoulder adduction and external rotation, 90° flexion of the elbow joint, medline positioning of the forearm, $0-30^{\circ}$ extension of the wrist, and ulnar deviation(24).

There were no significant differences in the non-dominant hand in the experiment group; however, grasp in the dominant hand showed a significant difference($p<.01$). There were no significant differences in either the dominant or non-dominant hand in the control group.

The gauge of the pinch meter is extremely accurate, being able to accurately measure tip inch, lateral pinch, and palmar pinch(three-jaw chuck). Measurements are taken in pounds or kilograms.

The non-dominant hand in the experiment group showed a significant difference in tip pinch, lateral pinch, and palmar pinch($p<.05$, $p<.01$). In the dominant hand, tip pinch and lateral pinch showed significant differences($p<.05$, $p<.01$), whereas palmar pinch did not.

The non-dominant hand in the control group showed a significant difference in palmar pinch($p<.05$), and no significant difference in tip pinch or lateral pinch. The dominant had showed a significant difference in palmar pinch($p<.05$), and no significant difference in tip pinch or lateral pinch.

The following are suggestions for future studies, based on the methods, results, and limitations of the present study.

First, the target age should be increased to over 65 years in order to stimulate motivation.

Second, the number of subjects should be increase in order to have a more accurate assessment of the effects of the experiment.

Third, longterm followup evaluation must be done in order to have a more accurate assessment of the effects of the experiment.

CONCLUSION

The present study was conducted to investigate the influence of handicraft activities on hand promptness and grasp in the elderly.

14 in-patients at A Senior's Hospital in Busan, between the ages of 70 and 85 years, were chosen as test subjects, and they were equally divided into two groups, an experiment group and a control.

The test was conducted between August 9 and September 29, 1010. Subjects in the experiment group participated in 2 hours of handicraft activities twice a week, and those in the control group did not participate in any handicraft activities. The Jebsen-Taylor Hand Function Test was used to evaluate hand promptness, and the pinch gauge was used to evaluate grasp. The following conclusions were made.

First, origami, rug making, and beadwork increased hand promptness in the elderly.

Second, origami, rug making, and beadwork increased grasp in the elderly.

Third, an actual decrease in hand grasp was seen in those who did not participate in the handicraft activities.

Based on the above results, it can be concluded that hand function activities have a positive effect on hand promptness and grasp in the elderly. Systemic hand function activities for the elderly will need to be developed, and further studies that include other factors such as various occupations and social levels will have to be completed.

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