



Original Article

## The effect of group exercise program on the self-efficacy and activities of daily living in adults with cerebral palsy

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**Abstract.** [Purpose] This study was carried out to examine the effect of the application of group exercise program composed to induce interests and assertive participation of adults with cerebral palsy on the self-efficacy and activities of daily living, as well as to provide basic clinical data that are effective and trustworthy in enhancing the physical and emotional interaction in the future. [Subjects and Methods] Those among the 23 adult with cerebral palsy who are the subjects of research and able to participate only in the evaluation of measurement tools prior to and after the experiment were allocated to the control group while only those who can participate in the group exercise program implemented over 12 sessions were allocated to the experimental group. For the control group, a range of motion of joint exercise and stretching exercise were executed on the arms, legs and trunk, while for the experimental group, group exercise that is implemented with participation of several subjects simultaneously was executed 2 times a week with 40 minutes for each session over a period of 6 weeks for the total of 12 sessions. [Results] In both the experimental group and the control group, there were statistically significant changes in the average scores of self-efficacy and activities of daily living after the exercise in comparison to that prior to the exercise. Moreover, there were statistically significant differences in self-efficacy and activities of daily living in terms of quantity of change prior to and after the exercise between the two groups. [Conclusion] Therefore, group exercise program composed to induce physical and emotional interaction, and active participation of adults with cerebral palsy can be considered as an effective intervention method in improving their self-efficacy and activities of daily living.

**Key words:** Cerebral palsy, Group exercise, Self-efficacy

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### INTRODUCTION

Adult with cerebral palsy is accompanied by chronic pain as the secondary problem arising from reduction in mobility and motor ability and such chronic pain induces musculoskeletal deformity<sup>1)</sup>, and, ultimately, affects the daily life or social activities of the patient<sup>2)</sup>. Although adult with cerebral palsy requires therapeutic intervention due to a diverse range of musculoskeletal symptoms and functional problems<sup>3)</sup>, realistically, youth with cerebral palsy is not able to maintain physical training through health service approach after graduation from school. Accordingly, they complain of a lot of pain in muscles and joints, and increasingly lose locomotion ability including walking as they get older due to the degradation and reduction in the range of motion of joint and muscle strength. Therefore, cerebral palsy requires care throughout the life and, for this purpose, physiotherapist must put in efforts to optimize independence of the patient from all aspects throughout the patient's life by enhancing the motor performances centered-around therapeutic exercise<sup>4)</sup>. However, in the case of cerebral palsy, it is

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the reality that majority of researches are on the health status of children since the therapeutic approach is not predominantly focused on being implemented on adults<sup>5</sup>).

Self-efficacy means the confidence that one can perform specific tasks in relation to the body<sup>6</sup>. That is, it can be defined as the ability to specifically organize actions for performing of activities related to the given tasks under specific situations that include the elements that are ambiguous, difficult to be anticipated and imparts tension due to the discernment of one's capabilities<sup>7</sup>. In fact, disabled persons are prone to having distorted cognition of one's body or activities due to loss of parts of the body, functional impairment and emotional disability, and may display difficulties in social adaptation including interpersonal relationship or group life because of low self-efficacy and sociability. In addition, since loss of such abilities further reduces the movement and interaction ability of the bodily parts in accordance with the environmental change for the efficient performance of exercise, the activities of daily living of adult with cerebral palsy including self-care, transfer and locomotion, communication and social cognition, etc. become limited.

Hutzler and Bar-Eli<sup>8</sup>) stated that exercise is necessary to improve the emotions and mental health of disabled persons, while Cameron and Monroe<sup>4</sup>) asserted that therapeutic exercise for cerebral palsy must be composed of goal-directed, functional and significant movements by considering the extent, type, cognition level and areas of the interest of disability, etc. If group exercise is applied to the adults with cerebral palsy who lacks activities due to body locomotive disability, it can impart affirmative effect on provision of motivation for life and promote social interaction among the participants<sup>9</sup>). That is, it is possible to improve self-efficacy in organizing and executing behavioral process necessary in accomplishment of goals related to body by having the patients to repetitively learn to solve exercise problems by practicing the ability to achieve the goals for specific tasks and by improving the adaptation ability under a diverse range of circumstances<sup>7</sup>). Accordingly, the enhancement of confidence and self-regard that one can perform specific tasks can affect the development of activities of daily living and sociability since they induce improvement of the qualitative level of exercise performances.

Although multifaceted clinical researches on systematic health and medical services with high quality provided to children with cerebral palsy have been carried out at home and abroad until now, there has been almost no therapeutic intervention on adults with cerebral palsy with musculoskeletal symptoms and functional problems. Moreover, there is insufficient research on their general health status and need for rehabilitation. Therefore, this study was carried out to examine the effect of the application of group exercise program composed to induce interests and assertive participation of adults with cerebral palsy on the self-efficacy and activities of daily living, as well as to provide basic clinical data that are effective and trustworthy in enhancing the physical and emotional interaction in the future.

## **SUBJECTS AND METHODS**

In this study, adult with cerebral palsy in the age bracket of 18–30 years diagnosed with disability of levels 1 to 2 encephalopathy by medical specialists in the areas of rehabilitation medicine and neurosurgery were selected as the experimental group. The detailed criteria for selection of the subjects of the study included the following. Firstly, those who can sustain seated posture on supplementary wheelchair. Secondly, those capable of performing boccia exercise, which is the group exercise program. Thirdly, those who achieved more than 18 points in the Mini-Mental Status Examination and has no difficulties in communicating and interacting with the researcher and participants. After having listened to the detailed explanations on the purpose, method, procedures, direct/indirect inconveniences and/or potential risks of the researcher, the subjects of the study consented to voluntarily participate in the experiment on their own will. In addition, this study was approved by the Life Ethics Committee of DONG-EUI University that responsibilities for the ensuring of human rights, dignity and safety of the research subjects will be fulfilled (IRB No. DIRB-201602-HR-R-007).

This study was executed in quasi-experimental study design method in order to examine the effects of group exercise program on the self-efficacy and activities of daily living of adult with cerebral palsy. Those among the 23 adult with cerebral palsy who are the subjects of research and able to participate only in the evaluation of measurement tools prior to and after the experiment for personal reasons were allocated to the control group while only those who can participate in the group exercise program implemented over 12 sessions were allocated to the experimental group. For the control group, a range of motion of joint exercise and stretching exercise were executed on the arms, legs and trunk, while for the experimental group, group exercise that is implemented with participation of several subjects simultaneously was executed 2 times a week with 40 minutes for each session over a period of 6 weeks for the total of 12 sessions. The group exercise program included boccia exercise, which is a sport for disabled persons due to cerebral palsy, that uses balls for the purposes of enhancement of interest and assertive participation of adults with cerebral palsy, and the detailed order of the exercise was composed in the following sequence:

First, warm-up exercise (10 minutes): Emotional stability and establishment of rapport A range of motion of joint exercise and stretching exercise for arms, legs and trunk. Second, main exercise (20 minutes): Enhancement of body coordination and mobility, fortification of muscle strength and endurance, and enhancement of activities and participation Boccia game (group game with 3–4 persons). Third, tidying-up exercise (10 minutes): Body massage and deep breathing training.

For the boccia exercise, which is the main exercise, the 3–4 person group game of the Boccia Game Regulation Manual (9th edition: 2005–2008) published by the Cerebral Palsy-International Sports and Recreation Association (CP-ISR) was applied in order to enable emotional support through interaction for and to enable adults with cerebral palsy to enjoy the

game by competing among the participants, while at the same time, enhancing the body mobility and coordination<sup>10</sup>). Warm-up and tidying-up exercise, at the time of execution of group exercise program, were conducted by the research assistants who received sufficient training on the detailed exercise procedures in advance under the guidance of the physiotherapists with more than 5 years of experiences in neurodevelopmental treatment. In addition, this exercise conducted only on the experimental group was executed under the supervision and assistance of 1 judge registered with the Judging Committee of the Korea Disabled Persons Boccia Federation and research assistant, respectively.

General self-efficacy and functional self-efficacy were measured for the self-efficacy in considerations for 3 aspects including the level, intensity and generality of the subjects<sup>7</sup>). The general self-efficacy is the tool developed by Sherer & Maddux<sup>11</sup>) and modified by Bosscher & Smit<sup>12</sup>) to make measurement easier using eliminating ambiguous words and questions with low relevance. This measurement tool is divided into three domains, which are progressiveness domain (3 questions), efforts domain (5 questions) and continuity domain (4 questions), encompassing 12 questions with 5-point scale answers for each question. For the functional self-efficacy, 9 easy questions answered that it can be done with the assistance of others and 9 questions with the exclusion of 5 questions related to independent mobility or walking in the self-efficacy scale related to functional activities developed by Resnick<sup>13</sup>) were used. For both self-efficacies, answers ranged from "Have no confidence at all=0 point" to "Completely confident=10 points," with higher score indicating higher self-efficacy. The reliability of this scale was Cronbach's  $\alpha=0.86$ <sup>14</sup>).

The functional status of the adult with cerebral palsy including the evaluation of the basic activities of daily living is measured by using the Modified Barthel Index (MBI)<sup>15</sup>). This measurement tool is composed of a total of 10 specific daily life activities including 7 items of self-care indices and 3 items of mobility indices. Different score is given for each of the items in accordance with the relative importance, and 5-scaled score can be given in accordance with the extent of the functions of the patient within an item (0–100 points). With the inter-examiner reliability of 0.84, the Modified Barthel Index has been reported as a measurement tool with high reliability<sup>16</sup>).

Data collected in this study were analyzed by using SPSS 22.0 program for Windows (IBM Corp., USA) and the significance level,  $\alpha$ , was set at 0.05 for statistical verification. Descriptive statistics were computed for the general characteristics of the research subjects and parameter test was executed for the regularity in the measurement variables after having confirmed through Kolmogorov-Smirnov analysis. Paired t-test was executed to analyze the changes in self-efficacy of the experimental group and the control group prior to and after the experiment, and independent t-test was executed to compare the difference between the two groups.

## RESULTS

General characteristics of research subjects are given in the Table 1. We evaluate whether the means for two independent groups are associated with the equal of variances using Levene's test. Moreover, the changes in the average score within the group of the experimental and control groups for the general and functional self-efficacy, and activities of daily living, as well as the results of the analysis of the differences in the quantity of changes prior to and after the exercise between the two groups are presented in the Table 1. In both the experimental group and the control group, there were statistically significant changes in the average scores of self-efficacy and activities of daily living after the exercise in comparison to that prior to the exercise. Moreover, there was statistically significant differences in self-efficacy and activities of daily living in terms of quantity of change prior to and after the exercise between the two groups ( $p<0.05$ ) (Table 2).

## DISCUSSION

The main problems that manifests in youth and adults with cerebral palsy include damages to nerve system, pain and fatigue due to increase in age, and degeneration of locomotion skills due to lack of physical activities<sup>17</sup>). Although there is trend of gradual increase in the anticipated lifespan of children with cerebral palsy and prevalence rate of adult with cerebral palsy since such children receive special medical rehabilitation services due to the advancement of modern medicine<sup>5</sup>), focus on therapeutic approaches for majority of cerebral palsy is failing to be transferred from children to adults. Therapeutic exercise imparts affirmative effects on self-efficacy<sup>19</sup>) by increasing not only the physical awareness but also physical self-awareness<sup>18</sup>), and physical activities performance to greater extent if the self-efficacy is high<sup>20, 21</sup>). In addition, since the performing of group exercise program as a part of physical education can not only increase muscle strength and mobility but also improve the quality of life, it is said to be highly beneficial therapeutic program from social aspect<sup>22</sup>). Therefore, this study examined the effect of application of group exercise program that included boccia exercise, which is a sport for disabled persons with cerebral palsy, on adult with cerebral palsy on the self-efficacy and activities of daily living of the research subjects.

Self-efficacy is personal belief that one thinks one is physically capable and can succeed in performing specific tasks<sup>23</sup>). Those with cerebral palsy has the passive tendency of not doing things oneself, and weakening of motivation for repetitively taking up challenges due to the lack of confidence arising from having experienced having repetitive failures on the attempt for movements and behaviors as one grows because of disability in posture and exercise. Accordingly, cerebral palsy lowers the self-efficacy of a person as one becomes adult, thereby increasing actual fear towards activity performance and failure

**Table 1.** Characteristics of the subjects (N=23)

Variables	Experimental group (N=11)	Control group (N=12)
Gender (male/female) <sup>a</sup>	6/5	7/5
Age (years) <sup>b</sup>	22.36 (3.47)	21.83 (3.01)
Height (cm) <sup>b</sup>	160.50 (7.72)	161.61 (6.32)
Weight (kg) <sup>b</sup>	57.93 (8.49)	60.31 (8.52)
Gestational age (weeks) <sup>b</sup>	36.09 (3.11)	33.67 (4.81)
Birth weight (g) <sup>b</sup>	2,693.64 (856.17)	2,284.17 (767.18)
Incubator care (weeks) <sup>b</sup>	3.91 (4.48)	5.58 (3.96)

<sup>a</sup>Number (%), <sup>b</sup>Mean (SD).

**Table 2.** Comparison of Self-efficacy Scale and MBI within and between groups (N=23)

Variables	Group	Pre-exercise	Post-exercise	Change values
General Self-efficacy Scale	Experimental	51.82 (10.55)	54.27 (11.03)*	2.45 (1.13)
	Control	49.42 (11.75)	50.83 (12.03)*	1.42 (1.00)*
Functional Self-efficacy Scale	Experimental	41.81 (10.17)	44.00 (10.37)*	2.18 (0.75)
	Control	39.00 (12.39)	40.50 (12.22)*	1.50 (0.67)*
Modified Barthel Index	Experimental	39.00 (9.34)	41.81 (10.24)*	2.82 (1.25)
	Control	35.67 (11.41)	37.25 (11.77)*	1.58 (1.38)*

Values are mean (SD). \*p<0.05.

to maximally demonstrate one's potentials. As such, it is important to induce the patients to put in even greater efforts with attention necessary for the task situation by improving the self-efficacy. In this study, the quantity of changes in self-efficacy of the adult with cerebral palsy in the experimental group who performed 6 weeks of group exercise program significantly increased more than that of the subjects in the control group. This is believed to be the result of the improvement in confidence of research subjects in the experimental group on their own capabilities by studying a diverse range of external stimulations in the process of participating in the group exercise program, appropriately controlling the environment in order to achieve good results and successfully composing and performing necessary actions.

The affirmative self-respect that can be obtained when therapeutic exercise is performed continuously enhances the cognition on the physical efficacy and external appearance, and, furthermore, has high possibility of promoting psychological growth such as self-accommodation and happiness<sup>24</sup>. Moreover, they asserted that motivation for taking up the challenges and achieving the goals for the given tasks, and confidence on and anticipation for the results of the efforts put impart influence on the changes in physical activities<sup>7</sup>, and that beliefs on the physical activities lead to cognition of the body and improve the ability to control oneself<sup>25</sup>. It is believed that adults with cerebral palsy were able to enhance the confidence and belief that they can successfully perform the actions necessary in overcoming their physical disabilities and performing the given tasks by recognizing their own and other's body schema, and improving mutual friendliness through the group exercise in this study also. Accordingly, it is deemed that group exercise program will be helpful in improving the inaccurate body awareness and low self-efficacy of adults with cerebral palsy, and in drawing out the potentials to lead them to participate in challenging tasks through inducing of strong internal motivation.

Since cerebral palsy needs life-long care, it is necessary to enhance motor performances and maximally improve independence in daily life through therapeutic exercise<sup>4</sup>. In addition, in the case of cerebral palsy, since characteristics for each of the types of the disabilities reduce body function and impart direct effect on the activities of daily living, social functions and quality of life are degraded even further with increased severity of disability. Isometric and functional muscle strength increased, walking stride got longer and cadence increased when group exercise program was executed on 8 children in the age bracket of 4–8 years with spastic diplegia<sup>26</sup>. In addition, Verschuren et al.<sup>27</sup> also discovered that not only the physical fitness but also the level of participation activities and quality of life improved as the results of execution of group exercise program over a period of 8 months on children with cerebral palsy. This study also produced significant greater increase in the quantity of changes in the activities of daily living in the experimental group in comparison to the control group when group exercise program was executed on adults with cerebral palsy for 6 weeks. This is determined to be the results of experiencing of automatic and natural movements by performing the group exercise activities by adults with cerebral palsy and advancement of the integrated ability of adults with cerebral palsy to execute cognitive, social and behavioral functions to appropriately coping with the environmental demands such as other persons and new tasks. Although many physiotherapists have the concern that group exercise program, when compared to individual customized therapy as a method of one-on-one

therapy, could result in substantially reduced attention, group exercise can be seen as a highly beneficial intervention method for adults with cerebral palsy since it can provide increase in health and mobility as well as a diverse range of benefits that can lead to improvement of participation in daily life and quality of life additionally on the basis of the results of this study.

The group therapy program executed by interacting with peer constituent members is more effective than individual practices<sup>28)</sup>, and that interaction activities composed of competition and cooperation with colleagues assist with the improvement of daily life by inducing motivation for learning<sup>29)</sup>. It is believed that it was possible to establish social interactions such as sense of belonging and accomplishment, mutual support and abiding by rules in the process of cooperating with each other in order to accomplish the same goal of winning the game as members of the same team in this study also since boccia exercise, a sports for disabled persons with cerebral palsy, is executed as a group formatted competition activity. That is, adult with cerebral palsy could not only learn new tasks and concepts by performing group exercise program but also acquire social skills though responding interaction on the basis of the actions of colleagues by paying attention to the actions of other participants, thereby improving the participation in daily life and quality of life.

Accordingly, group exercise program executed on adult with cerebral palsy can improve self-efficacy through reduction in anxiety and enhancement of psychological confidence of the participants, and improve the activities of daily living through physical activities that enable them to learn functional and cognitive things. Moreover, the program enables the patents to perform interesting and challenging therapy along with the experience of comfort of engaging in the program with other disabled persons with cerebral palsy. The finding of this study showed to be the results of self-efficacy promotion by performing the group exercise program of adults with cerebral palsy. That is, self-efficacy will be responsive to environmental change, which facilitates success and increases long-term motivation and will improve their efforts toward change when they were in unresponsive environment. High level of self-efficacy improved confidence to produce designated performance in a specific situation and succeed in an achievement or a task in activities of daily living. Therefore, group exercise program composed to induce physical and emotional interaction, and active participation of adults with cerebral palsy can be considered as an effective intervention method in improving their self-efficacy and activities of daily living.

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## REFERENCES

- 1) Schwartz L, Engel JM, Jensen MP: Pain in persons with cerebral palsy. *Arch Phys Med Rehabil*, 1999, 80: 1243–1246. [Medline] [CrossRef]
- 2) Engel JM, Jensen MP, Hoffman AJ, et al.: Pain in persons with cerebral palsy: extension and cross validation. *Arch Phys Med Rehabil*, 2003, 84: 1125–1128. [Medline] [CrossRef]
- 3) Cathels BA, Reddihough DS: The health care of young adults with cerebral palsy. *Med J Aust*, 1993, 159: 444–446. [Medline]
- 4) Cameron MH, Monroe LG: Physical rehabilitation; evidence-based examination evaluation, and intervention. Elsevier, 2007.
- 5) Bottos M, Feliciangeli A, Sciuto L, et al.: Functional status of adults with cerebral palsy and implications for treatment of children. *Dev Med Child Neurol*, 2001, 43: 516–528. [Medline] [CrossRef]
- 6) Ryckman RM, Robbins MA, Thomaton B, et al.: Development and validation of physical self-efficacy scale. *J Pers Soc Psychol*, 1982, 24: 891–900. [CrossRef]
- 7) Bandura A: Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev*, 1977, 84: 191–215. [Medline] [CrossRef]
- 8) Hutzler Y, Bar-Eli M: Psychological benefits of sports for disabled people: a review. *Scand J Med Sci Sports*, 1993, 3: 217–228. [CrossRef]
- 9) Carr JH, Shepherd RB: Stroke rehabilitation. London: Butterworth-Heinemann, 2003.
- 10) CP-ISR (Cerebral Palsy-International Sports and Recreation Association) 9th (2005–2008) <http://k-boccia.kosad.kr>
- 11) Sherer M, Maddux JE: The self-efficacy scale: construction and validation. *Psychol Rep*, 1982, 51: 663–671. [CrossRef]
- 12) Bosscher RJ, Smit JH: Confirmatory factor analysis of the general self-efficacy scale. *Behav Res Ther*, 1998, 36: 339–343. [Medline] [CrossRef]
- 13) Resnick B: Self-efficacy in geriatric rehabilitation. University of Maryland Doctoral Dissertation. 1996.
- 14) Lee S: The correlation study of body image, self efficacy and self care on hemiplegia patients. The Graduate School of Sham Yook University, 1998.
- 15) Shah S, Vanclay F, Cooper B: Improving the sensitivity of the Barthel Index for stroke rehabilitation. *J Clin Epidemiol*, 1989, 42: 703–709. [Medline] [Cross-Ref]
- 16) Hachisuka K, Ogata H, Ohkuma H, et al.: Test-retest and inter-method reliability of the self-rating Barthel Index. *Clin Rehabil*, 1997, 11: 28–35. [Medline] [CrossRef]
- 17) Jahnsen R, Villien L, Egeland T, et al.: Locomotion skills in adults with cerebral palsy. *Clin Rehabil*, 2004, 18: 309–316. [Medline] [CrossRef]
- 18) Levy SS, Ebbeck V: The exercise and self-esteem model in adult women: the inclusion of physical acceptance. *Psychol Sport Exerc*, 2005, 6: 571–584. [Cross-Ref]
- 19) Fox KR: Self-esteem, self-perceptions, and exercise. *Int J Sport Psychol*, 2000, 31: 228–240.
- 20) Bodin T, Martinsen EW: Mood and self-efficacy during acute exercise in clinical depression. *J Sport Exerc Psychol*, 2004, 26: 623–633. [CrossRef]
- 21) Davis-Berman J: Physical self-efficacy, perceived physical status, and depressive symptomatology in older adults. *J Psychol*, 1990, 124: 207–215. [Medline] [CrossRef]
- 22) Walters S: Benefits of a group exercise program on a student with congenital hydrocephalus and multiple co-diagnoses. *Phys Ther and Hum Mov Sci*, 2013.

- 23) Cox RH: Sport psychology: concepts and applications, 6th ed. New York: McGraw-Hill, 2007.
- 24) Buckworth J, Dishmann RK: Exercise psychology. Champaign: Human Kinetics, 2002.
- 25) van der Ploeg HP, van der Beek AJ, van der Woude LH, et al.: Physical activity for people with a disability: a conceptual model. *Sports Med*, 2004, 34: 639–649. [\[Medline\]](#) [\[CrossRef\]](#)
- 26) Blundell SW, Shepherd RB, Dean CM, et al.: Functional strength training in cerebral palsy: a pilot study of a group circuit training class for children aged 4–8 years. *Clin Rehabil*, 2003, 17: 48–57. [\[Medline\]](#) [\[CrossRef\]](#)
- 27) Verschuren O, Ketelaar M, Gorter JW, et al.: Exercise training program in children and adolescents with cerebral palsy: a randomized controlled trial. *Arch Pediatr Adolesc Med*, 2007, 161: 1075–1081. [\[Medline\]](#) [\[CrossRef\]](#)
- 28) Shea CH, Wulf G, Whitacre C: Enhancing training efficiency and effectiveness through the use of dyad training. *J Mot Behav*, 1999, 31: 119–125. [\[Medline\]](#) [\[CrossRef\]](#)
- 29) McNevin NH, Wulf G, Carlson C: Effects of attentional focus, self-control, and dyad training on motor learning: implications for physical rehabilitation. *Phys Ther*, 2000, 80: 373–385. [\[Medline\]](#) [\[CrossRef\]](#)