

# Experimental Study on Extracurricular Coaching and Training to Improve the Activities of Daily Living of Special Children

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## ABSTRACT

Thirty children from a special education school in Sichuan Province were selected. According to their activities of daily living, types of obstacle and age, they were randomly divided into experimental group and control group. This paper explores the influence of extracurricular coaching and training on the activities of daily living of special children. The scale of activities of daily living was used as an assessment tool for pre- and post-measurement. The results show that the post-test scores of activities about daily living of children in the experimental group receiving extracurricular coaching and training were significantly lower than that of the control group. It shows that extracurricular coaching and training has a significant effect on improving the activities of daily living of special children.

**Keywords:** special children, extracurricular coaching and training, activities of daily living

## I. INTRODUCTION

Activities of daily living (ADL) refers to the ability of people to master a series of basic activities in daily life, in order to take care of their own clothing, food, shelter, and living, to maintain personal hygiene, cleanliness and independent living [1]. These abilities are extremely ordinary and easy to grasp for ordinary people, but special children (disabled children) often need special training and guidance due to their physical or psychological characteristics [2]. To this end, the Ministry of Education clearly stated in the "Compulsory Education Curriculum Standards for School for the Mentally Handicapped Children (2016)" released in 2016: the general goal of the life adaptation curriculum is "to help students understand basic common sense of life and master the necessary adaptive skills, cultivate good behavior habits, form basic living adaptability and good morals, and become a citizen adapted to social life". The general goal of the labor skills course is "to help students to have or form independent or semi-autonomous living ability through self-service labor, housework ... which will lay the foundation for equal participation in social life and employment." [3] This shows that improving the activities of daily living of special children is one of the training goals of special education schools. In order to achieve this goal, improve the quality of life of special children and

reduce the burden on their families and society, this study focuses on the characteristics of special children such as slow perception, poor constancy, slow speed of remembering, instable balance, and difficult memory retrieval or inaccurate, poor memory organization ability, poor abstract thinking ability, weak will, lack of initiative, etc. The experimental design of extracurricular coaching and training was used to train the activities of daily living of special children for a period of 4 months to explore the influence of extra-curricular coaching and training on the activities of daily living of special children. It is hoped to provide a simple, practical and effective training method for improving the activities of daily living of special children.

## II. RESEARCH METHODS

### A. Research objects

Firstly, the children living in a special education school in Sichuan Province were measured using the scale of activities of daily living. According to their current level of activities of daily living, type of obstacle and age, 30 special children were selected and matched into 15 groups (there are two children in each group, with similar pretest scores, obstacle types, and age). And then a random sampling method was used to draw one child from each group into the experimental group and the other into the control group. The experimental group and the control group had 15 subjects each, of which 10 were boys, 5 were girls; 10

\*Fund: University-level Scientific Research Project of Introducing Teachers to Leshan Normal University in 2016 (No. S16025).

were mentally retarded, 3 had learning disabilities, and 2 had emotional disorders; the average ages were  $(11.73 \pm 1.85)$  years old and  $(11.33 \pm 1.63)$  years old.

### *B. Research design*

This study uses the paired experimental design of the experimental group and the control group. The research assumes that extracurricular coaching has a positive effect on the improvement of activities of daily living of special children. Extracurricular coaching and training is an independent variable and the activity of daily living of special children is the dependent variable. It is required to randomly assign paired children according to the current level of activities of daily living, type of obstacle and age to the experimental group and the control group to control the individual differences of the subjects. It is necessary to select the students living in the school and control the influence of external factors on the experiment. It is required to establish a good teacher-student relationship to eliminate participants' tension or non-cooperation. Also, it can adopt a constant method to control the environment, instructions, and the impact of the main test on the experiment.

### *C. Measurement tools*

The scale of activities of daily living compiled by American scholar Lawton and Brody in 1969 is adopted, which includes physical activities of daily living (PADL) and instrumental activities of daily living (IADL). PADL includes 6 items such as going to the toilet, eating, dressing, grooming, walking, and bathing. IADL includes 8 items such as riding, shopping, housework, laundry, cooking, telephone, financial management and medication. Each item of the scale is divided into four levels, that is, the students can do it completely, have some difficulties, need help, and cannot do it at all. The items are given 1 to 4 points, with a total score of 14 to 56 points. A score of 14 indicates complete normality. The score over 14 points indicates varying degrees of dysfunction. PADL score over 6 points indicates PADL impairment, and IADL score over 8 points indicates IADL impairment; the higher the score is, the more severe the dysfunction will be [5] [6]. The scale has high reliability and validity. The pre-measured Cronbach's coefficient in this study was 0.817, and the post-measured Cronbach's coefficient was 0.842.

### *D. Experimental procedure*

1) *Pre-test and grouping*: Prior to the experiment, researchers, parents, and head teachers used ADL scale to measure all subjects. They were paired according to the measurement score, the type of children's obstacle, and age, and then randomly assigned to the experimental group and the control group.

2) *Guidance and intervention*: In the course of this study, the control group and the experimental group conducted classroom teaching in accordance with teaching routines. In the classroom teaching, they made theoretical teaching, video demonstrations, practical demonstrations, and practice exercises of the activity of daily life. It was set 2 times/week and 40min per time. And this test last 4 months (one semester). The teaching content, teaching methods, teaching tools, teaching process and other aspects of all courses were consistent. For the experimental group, follow-up instruction and training was conducted regularly and irregularly in the actual life of the subjects. This test would make regular training: 2 times / week. The guidance content is mainly related to the activities of daily life learned in the classroom during the week. The guidance forms include observing the actual operation of the participants, teacher presentations, one-to-one and hand-to-hand guidance, and exchange of learning experiences. The place of instruction is determined according to the content of instruction, including student dormitory, canteen, washroom, playground, classroom, etc. The time of instruction is determined according to the mastery of the subjects. This test would make irregular training: it is required to observe the experimental group at any time, and provide guidance as soon as they find it difficult to complete basic items of activities of daily life. The time, place, and content depend on the specific situation.

3) *Aftertest*: After the experiment, researchers, parents, and class teachers still used the ADL scale to measure the subjects of the experimental group and control group.

### *E. Statistical processing*

The data were processed using SPSS19.0 statistical software, and analyzed by paired sample t test.  $P < 0.05$  was considered statistically significant.

## **III. RESEARCH RESULTS**

### *A. Comparison of pre-test ADL scores between the experimental group and the control group*

Pretest ADL scores of the experimental group and the control group were subjected to paired sample t test (see "Table I"). The results showed that there were no significant differences in the score of physical activities of daily living, the score of instrumental activities of daily living, and total score of the two groups of subjects before the experiment ( $P > 0.05$ ), indicating that the activities of daily living of the experimental group and the control group were not significantly different, and were comparable.

TABLE I. COMPARISON OF PRETEST ADL SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP ( $M \pm SD$ )

Item	Experimental group	Control group	T	P
PADL	9.40±2.87	9.73±3.11	-0.471	0.645
IADL	24.13±4.29	23.87±2.20	0.343	0.737
ADL	33.53±5.94	33.60±4.75	-0.085	0.933

### B. Comparison of post-test ADL scores of experimental group and control group

The paired sample t test (see "Table II") was performed by ADL scores of the experimental group and the control group after the experiment, and the results showed that there was no significant difference in the post-test scores of the physical activities of daily living between the experimental group and the control group ( $P > 0.05$ ), but the differences in scores of instrumental activities of daily living and total scores were significant ( $P < 0.05$ ), indicating that the level of ADL in the experimental group was significantly higher than that of the control group.

TABLE II. COMPARISON OF POST-TEST ADL SCORES OF EXPERIMENTAL GROUP AND CONTROL GROUP ( $M \pm SD$ )

Item	Experimental group	Control group	T value	P value
PADL	8.60±2.03	9.67±3.16	-1.862	0.084
IADL	20.87±3.93	23.00±2.70	-3.872	0.002
ADL	29.47±4.96	32.67±5.30	-4.454	0.001

### C. Comparison of pre-test ADL score and post-test ADL score of subjects in the experimental group

The ADL scores of the experimental group before and after the experiment were subjected to paired sample t test (see "Table III"). As a result, the physical activities of daily living of experimental group was not significantly different before and after the test ( $P > 0.05$ ), but the score of instrumental activities of daily living and total scores before and after the test were significantly different ( $P < 0.05$ ), indicating that the activities of daily living of experimental group after intervention was significantly higher than that before intervention.

TABLE III. COMPARISON OF PRE-TEST ADL SCORE AND POST-TEST ADL SCORE OF SUBJECTS IN THE EXPERIMENTAL GROUP ( $M \pm SD$ )

Item	pre-test	post-test	t value	P value
PADL	9.40±2.87	8.60±2.03	1.048	0.312
IADL	24.13±4.29	20.87±3.93	5.262	0.000
ADL	33.53±5.94	29.47±4.96	11.355	0.000

### D. Comparison of pre-test ADL score and post-test ADL score of subjects in the control group

The paired sample t tests were performed on ADL scores of the control group subjects before and after the experiment (see "Table IV"). The results showed that there was no significant difference in the physical activities of daily living of the subjects in control group before and after the test ( $P > 0.05$ ). The ADL scores and total scores before and after the test were significantly different ( $P < 0.05$ ), indicating that the control group's ADL level was significantly higher than that before the experiment.

TABLE IV. COMPARISON OF PRE-TEST ADL SCORE AND POST-TEST ADL SCORE OF SUBJECTS IN THE CONTROL GROUP ( $M \pm SD$ )

Item	pre-test	post-test	t value	P value
PADL	9.73±3.11	9.67±3.16	0.250	0.806
IADL	23.87±2.20	23.00±2.70	2.476	0.027
ADL	33.60±4.75	32.67±5.30	3.500	0.004

## IV. DISCUSSION

### A. Analysis on the influence of extracurricular coaching and training on the physical activities of daily living of special children

In order to control the influence of off-school factors on the experiment in this study, all the selected subjects were resident students. At present, the most basic requirement for the resident students of special education schools is that students need to have a certain ability to take care of their physical lives [7]. Therefore, the levels of physical activities of daily living of the subjects in two groups before the experiment vary from fully taking care of themselves and having some difficulties. However, they can complete without the help of others. It may be precisely because these children already have certain physical activities of daily living. And the improvement space is limited. The physical activities of daily living of both the experimental group and the control group were improved after the experiment, but the difference was not significant. The physical activities of daily living of the experimental group were improved to a higher degree than that of the control group. However, the difference is not significant, which indicates that the effect of extracurricular coaching and training on special children who have basic physical activities of daily living is not obvious.

*B. Analysis on the influence of extracurricular coaching and training on the instrumental activities of daily living and total living ability of special children*

There had significant differences in the score of instrumental activities of daily living scores and total scores of the experimental group and control group before and after the intervention, and the experimental group and control group had significant differences in the scores of instrumental activities of daily living and total scores after the intervention. And the degree of improvement was significant, indicating that the classroom teaching and training of activities of daily life for special children is effective. Combined with simple and practical extra-curricular guidance and training, the effect will be better. This may be related to the developmental characteristics of special children. Due to their poor constancy, poor memory organization, and fast forgetting, simple classroom training can't help them effectively. If the teachers combine life with practice after class, combine what the special children have learned in the classroom with actual operations, the students can integrate the theory with the practice, and use both hands and brains, making it unified in knowledge and action. At the same time, the teachers can continuously strengthen the training, and make the correction while training, truly achieving "learning by doing" and "doing while learning". The more times the children practice, the easier it is to form conditioned reflexes, and the easier it is to gain direct experience and carry out in a variety of life practice activities. It will also help to increase their interest, mobilize their enthusiasm, give play to their subjective initiative, and effectively improve their living ability.

## V. CONCLUSION

Extra-curricular coaching and training has a significant effect on improving the activities of daily living of special children, which validates the hypothesis. To this end, the following suggestions are made:

*A. Paying attention to integrate the teaching inside and outside the classroom*

Based on the characteristics of special children, teachers should avoid the teaching being divorced from reality. When imparting knowledge, teachers should adopt appropriate methods for the content of knowledge. For example, the content of daily activities such as diet, hygiene, and clothing should be combined with the classroom. The teachers should guide students experience life in daily real environment, help them to concrete abstract knowledge, achieve theoretical knowledge combined with life practice. Through

repeated practice, the special children can strengthen memory, acquire skills and improve life ability.

*B. Strengthening discipline connection and cooperation among teachers*

The activities of daily living is closely combined with life adaptation courses and labor skills courses, and has a certain connection with courses such as life language, life mathematics, painting and manual and rehabilitation training. The study of activities of daily living requires students to comprehensively use relevant knowledge of life language, life mathematics and other related disciplines and a variety of abilities such as cognition, movement, communication, etc. The physical and mental functions are improved through the use of hands, brains, and feet to achieve internalization of knowledge and mastery of skills. Therefore, it is necessary to strengthen the links among various disciplines, which cooperate with each other and infiltrate each other. Class teachers, subject teachers, life teachers, etc. should conduct regular seminars on teaching content, teaching focus, teaching requirements, and students' conditions, etc., and operate closely to continuously strengthen and consolidate the knowledge learned by students. For example, when talking about personal hygiene, the teachers of the Chinese language course start with how to express their sanitary wishes, and the teachers of the life adaptation course explain and demonstrate the correct method of implementing personal hygiene. The students should practice repeatedly. Life teacher can strengthen the guidance, reinforcement and correction in daily life.

*C. Paying attention to home-school cooperation*

Many parents do not understand the importance of education and training, or do not have the patience to teach their children some basic self-care skills. They always arrange the children's life, which makes these children lack the ability to operate and even develop their daily dependence [8]. Therefore, it is necessary to pay attention to home-school cooperation, publicize the importance of cultivating children's self-care ability, and obtain parental cooperation and support. The special children will learn good habits and living skills in school and continue to practice and consolidate back home in order to obtain more good results.

*D. Respect for individual differences*

Each special child is an independent individual, and the special children's ability to take care of themselves is related to the type of obstacle, age, intelligence, severity of symptoms and motor skills [9]. Therefore, teachers must follow the concept of individualized education. Life self-care education can not only care about how to teach them the teaching content. It is necessary to pay attention to their feelings, needs and interests. The teachers should know the differences

between them in order to set goals, take hierarchical teaching, and carry out the teaching according to their aptitude. Each child will eventually play his best level and achieve the best state of self-care.

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