

Research on the Influence of the "CTP" Integrated Physical Education Teaching Mode on School Adaptation of Autistic Students

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Abstract: A study of 27 autistic students from ordinary schools was carried out. Implement CTP comprehensive PE teaching in PE class. After 4 months of intervention, the results showed that the autistic students had made significant progress in identifying others, cooperating, being polite, talking/interacting, and following rules. There was no discernible effect on understanding others, evaluating others, sharing others, and helping others.

1. Introduction

According to studies, reasonable physical exercise has a positive impact on the psychology of autistic students, and can significantly reduce the occurrence of their problem behaviours. Therefore, this study intends to explore the influence of the "CTP" integrated physical education teaching mode on school adaptation of autistic students, so as to improve the physical education learning effects of autistic students and promote their physical and mental health development.

2. Definition of Core Concepts

2.1. Integrated Physical Education

Integrated physical education is to integrate disabled students and non-disabled students into the same physical education environment by creating the environment and conditions. Students who are eligible can attend classes together, and students who are not eligible should receive physical education in the same educational environment even if they cannot attend classes together ^[1].

2.2. "CTP" Integrated Physical Education Teaching Mode

On the basis of teaching practice for many years, the CTP of this study consists of three elements: C for cooperative evaluation, T for teaching support, and P for phase evaluation. CTP is achieved by the following steps: Construct the cooperative evaluation form of General & Special teachers (physical education teachers in general schools and special education teachers), and use scales to diagnose education for autistic students, and formulate teaching objectives; Refer to the Curriculum Standards for Physical Education and Health in Compulsory Education and the Curriculum Standards for Compulsory Education in Mentally Retarded Schools, and formulate individualized physical education teaching plans for autistic students and effectively conduct implementation; General & Special teachers evaluate the development of autistic students by integrating classroom observation, scale results, in order to lay a foundation for the adjustment and formulation of teaching objectives in the next stage.

2.3. Autism

Autism Spectrum Disorder (ASD) is a serious developmental disorder that occurs in children before the age of 3 ^[2]. The main manifestations of autism are: difficulties in social interaction, communication and repetitive behaviors ^[3].

3. Research Objects and Methodology

3.1. Research Objects

In this study, autistic students who study in ordinary schools. The experimental group consists of 27 students from 11 schools, who will receive the "CTP" integrated physical education mode; the control group consists of 25 students from 12 schools and only participate in the pretests and post-test.

3.2. Research Methodology

This study adopts the methods of interview, observation and testing to ensure the smooth implementation of this subject.

Before the implementation, for 2 weeks, physical education teachers in ordinary schools and special schools used the school Adaptability assessment scale to diagnose autistic students. No teaching intervention was taken at this stage.

In the process of implementation, according to the diagnosis results of early education, the individualized teaching plan of integrated physical education for autistic students was developed, and the intervention was carried out for 4 months. Classes were held three times a week in primary and secondary schools, with each class lasting 40 minutes. Due to the differences in individual abilities of autistic students, different integrated physical education teaching strategies are adopted to meet the different needs of individuals. Special education teachers regularly track the cases of autistic students, observe their performance in class, and regularly carry out discussions with physical education teachers.

After the implementation, for 2 weeks, the integrated physical education teaching was withdrawn, according to the original teaching activities, and the educational diagnosis was scaled again in the last week. Perform data comparison.

4. Research Results and Analysis

4.1. Analysis of the Results of the school adaptability assessment scale

4.1.1. Knowing Others

In the aspect of Knowing Others, the post-test results of the experimental group and the control group are $P=0.041$; since $P<0.05$, there is a significant difference between the experimental group and the control group. In the experimental group, $P=0.030$, and $P<0.05$, so there is a significant difference in the experimental group. In the control group, $P=0.175$, and $P>0.05$, there was no significant difference in the control group.

According to the experimental results, in terms of knowing others, there was no significant difference in pretest and post-test scores in the control group. The pretest and post-test scores were significantly different for the experimental group, and were higher than the control group. Results show that the two groups, without significant differences before the intervention, demonstrated significant differences after the intervention. The results signify that integrated physical education improves the ability of autistic students to know others, and autistic students can tell the names of teachers and a small number of classmates with few or no prompts.

In the basketball integration physical education class, a "finding friends" activity was organized, and the visual prompt strategy was adopted. While dribbling, students went to those with autistic students and reached out to show their kindness. With the help of classmates, autistic students also shook hands and responded. Through practice, autistic students broadened their understanding of themselves and the things around them.

4.1.2. Understanding Others

In Understanding Others, the experimental group and the control group post-test results are $P=0.071$, with $P>0.05$, which means that there was no significant difference between the experimental group and the control group. As for the experimental group, $P=0.547$, with $P>0.05$,

which means that there was no significant difference in the experimental group. While for the control group, $P=0.334$, with $P>0.05$, meaning there was no significant difference in the control group.

According to the experimental results, *in re* understanding others, there was no significant difference in the pretest and post-test scores in the control group, and there was no significant difference in the pretest and post-test scores in the experimental group, which shows that integrating physical education did not bring noticeable improvement regarding the ability of autistic students to understand others, which may be related to their own factors. They can learn to observe others and experience others emotions through physical education step by step.

4.1.3. Evaluating Others

In Evaluating Others, the experimental group and the control groups post-test results are $P=0.225$, with $P>0.05$, which means that there was no significant difference between the experimental group and the control group. As for the experimental group, $P=0.713$, with $P>0.05$, which means that there was no significant difference in the experimental group. As for the control group, $P=0.674$, with $P>0.05$, which means that there was no significant difference in the control group.

According to the experimental results, in Evaluating Others, there was no significant difference in the pretest and post-test scores in the control group, and no significant difference the pretest and post-test scores in the experimental group, which shows that integrated physical education did not improve the ability of autistic students to evaluate others. In the future physical education classroom evaluation, autistic students are encouraged to participate in the evaluation and express their thoughts with language or gestures.

4.1.4. Cooperation

In terms of Cooperation, the experimental group and the control groups post-test results are $P=0.024$, with $P<0.05$. It means that the experimental group and the control group have significant differences. As for the experimental group, $P=0.000$, with $P<0.01$, which shows that there was significant differences in the experimental group. However, for the control group, $P=0.579$, with $P>0.05$, which means that there was no significant difference in the control group.

From the experimental results, in terms of Cooperation, there was no significant difference between the pretest and post-test scores in the control group. The pretest and post-test scores were significantly different for the experimental group, and were higher than the control group. Results show that the two groups, without significant differences before the intervention, demonstrated significant differences after the intervention. The results signify that integrated physical education improves the cooperation ability of autistic students.

In the integrated physical education classroom, For example, when carrying out the "two-person three-legged" game teaching, the students are divided into several heterogeneous groups, with five people in each group. Four people shoulder to shoulder shout neat slogans and walk in unison, and one person guides the autistic students to participate in the exercise. After reaching the finish line, the partner affirms and encourages the autistic students to make progress. Making students with autism feel the power of peer support is helpful to enhance the motivation of sports learning^[4]. In the later period, the students with autism showed more cooperative behaviors with the same goal.

4.1.5. Sharing

In the aspect of Sharing, the results of the experimental and control group post-test are $P=0.075$, with $P>0.05$. After comparison, the experimental group and the control group have no significant difference. As for the experimental group, $P=0.493$, with $P>0.05$, which means that there was no significant difference in the experimental group. And for the control group, $P=0.321$, with $P>0.05$, which means that there was no significant difference in the control group.

From the experimental results, there was no significant difference in the pretest and post-test scores in the control group in terms of sharing, and no significant difference in the pretest and post-test scores in the experimental group, which shows that the integrated physical education

intervention has no apparent effects in improving the sharing consciousness of autistic students. This result is related to their inability to express their wishes when getting along with others on weekdays. Therefore, it is necessary to create more opportunities to encourage them to exercise more in physical education classes.

4.1.6. Courtesy

In Courtesy, the results of the experimental group and the control group post-test are $P=0.046$, with $P<0.05$, and the experimental group and the control group have significant differences. As for the experimental group, $P=0.031$, with $P<0.05$, which means that there was no significant differences in the experimental group. On the other hand, in the control group, $P=0.253$, with $P>0.05$, which shows that there was no significant difference in the control group .

From the experimental results, there was no significant difference between the test scores before and after the control group in terms of Courtesy, but the pretest and post-test scores in the experimental group were significantly different, and were higher than the control group. Results show that the two groups, without significant differences before the intervention, demonstrated significant differences after the intervention. The results signify that the integration of physical education can promote the improvement of courtesy of autistic students. Some autistic students can respond with polite words such as "hello" and "thank you" after their classmates offer help. However, they still need to be more voluntary in greeting others.

4.1.7. Helping Others

In Helping Others, the experimental group and the control groups post-test results are $P=0.143$, $P>0.05$, which means that there was no significant difference between the experimental group and the control group. As for the experimental group, $P=0.754$, $P>0.05$, showing that there was no significant difference in the experimental group. As for the control group, $P=0.647$, $P>0.05$, which shows no significant difference in the control group.

From the experimental results, in terms of Helping Others, there was no significant difference in the pretest and post-test scores in the control group, and no significant difference in the pretest and post-test scores in the experimental group, which shows that the integrated physical education intervention did not bring evident improvement to autistic students in Helping Others. In the future, it is necessary to strengthen their awareness in this respect and cultivate their sense of responsibility in physical education classes. For example, autistic students are encouraged to help distribute and recycle teaching tools and equipment, and this can create opportunities for them to realize their self-worth.

4.1.8. Conversation/Interaction

Regarding Conversation/Interaction, the results of the experimental group and the control group post-test are $P=0.037$, $P<0.05$, showing a significant difference between the experimental group and the control group. While for the experimental group, $P=0.029$, $P<0.05$, which means that there were significant differences in the experimental group. As for the control group, $P=0.133$, $P>0.05$, and it means that there was no significant difference in the control group.

From the experimental results, in terms of Conversation/Interaction, there was no significant difference between the pretest and post-test scores in the control group, but the pretest and post-test scores in the experimental group were significantly different and higher than the control group. Results show that the two groups, without significant differences before the intervention, demonstrated significant differences after the intervention. The results signify that integrated physical education improves the Conversation/Interaction ability of autistic students.

In physical education classes, teachers are expected to use the strategy of building a display platform. autistic students should be encouraged to stand in front of the team, shout the beat and lead the class to do preparatory activities; During the Play, autistic students can act as referees to help complete the activities. These arrangements can help them realize that they can contribute to the class, and thus they can gain a sense of identity, gradually open their hearts, and increase their willingness to interact with classmates.

4.1.9. Compliance with Rules

In Compliance with Rules, the experimental group and the control groups post-test results are $P=0.002$, $P<0.01$, and there were significant differences between the experimental and control groups. As for the experimental group, $P=0.001$, $P<0.01$, there were significant differences in the experimental group. In the control group, $P=0.465$, $P>0.05$, and there was no significant difference in the control group.

From the experimental results, in terms of Compliance with Rules, there was no significant difference between the pretest and post-test scores in the control group, but the pretest and post-test scores in the experimental group were significantly different and higher than the control group. Results show that the two groups, without significant differences before the intervention, demonstrated significant differences after the intervention. The results signify that integrated physical education improves the ability of autistic students to obey rules.

Therefore, in physical education classes, we should adopt the strategies of visual cues and strengthen behaviours. Physical education teachers and class leaders should play games first, while autistic students should be observers, and then they can participate in the game. When a autistic student abides by the rules, he/she can receive positive feedback to strengthen the rule-abiding behaviour.

5. Conclusions and Recommendations

5.1. Conclusions

The social adaptability of autistic students has been improved, manifested in evident progress in knowing others, cooperation, courtesy, conversation/interaction and complying with rules. There were no obvious effects on understanding others, evaluating others, sharing and helping others, so it is necessary to strengthen these exercises in physical education class.

5.2. Recommendations

The action plan of the "CTP" integrated physical education teaching mode for autistic students has been successfully implemented and achieved the expected results, but there are still limitations. There are more to be explored, such as the cooperation form of "General-Special" teachers (physical education teachers in general schools and special education teachers), the implementation of physical education with "one person, one case" as the core, and the evaluation method of "data observation". Future research should make full use of all resources and continue to improve the integrated physical education teaching mode.

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