

A Pilot Study of Investigate
The Certificate System for Teaching in Adapted Physical Education in Mainland China

by

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Abstract

Physical Education is outstanding and common cultural heritage of humanity because it can foster life's physical and spiritual qualities. Most nations have enacted laws and initiated regulations to protect rights of people with disabilities to participate and enjoy sports activities and physical education.

In 1994, more than 300 participants representing 92 governments and 25 international organizations converged in Salamanca to promote the objectives of "Education for All". They considered the fundamental shift in education policy needed to teach 'Inclusive Education' so that schools would serve every child, especially those with special educational needs. To provide a quality education (including physical education) to every child is now a globally accepted reality, and which is why school systems in developed countries are moving from "mainstreaming" and "integration" towards the development of "Inclusive Schools" (Ainscow, 1993). As a developing nation, China is also in this transition stage, but unlike developed countries, there are still some problems with inclusive physical education.

This research will try to solve some of the problems which are hindering special physical education in China moving towards inclusive physical education, such as the shortage of physical education teachers (existing teachers do not have the professional skills), and the amount of time needed to train APE teachers. This thesis aims to investigate and demonstrate to stakeholders how the teachers' physical education certification system can be adopted in China.

This research is divided into four parts; part one is a review of current literature to determine how the physical education teachers' qualification system is developing across the world. The "2013 Education Statistics report of China" (MEPRC, 2014) and the SPORTDiscus, Pubmed, Physical Education, and CNKI literature databases are two parts of data sources used in this research. The second part is the questionnaire survey that was carried out from February to June 2015, where the author distributed 100 questionnaires via field visits and mailing, to about 100 teachers employed by more than 20 special schools. The third part used mathematical calculations to study the extent of demand and speed of training of current APE teachers. The fourth part compares the physical educators' training and certification mode in mainland China and the USA with a four stage comparative methodology, to try and investigate a similar system in mainland China.

The research shows that after decades of development, the CAPE system in the US is the world leader. My survey shows that most teachers believe their existing skills will not cope with inclusive physical education, but they are willing to participate in training. The third part of my research shows that mainland China conservatively needs more than 24,000 APE teachers and the current training mode cannot meet this demand. The final part shows that China's legal protection, course system, training system, and quality evaluation has certain differences with the United States, which means a certification system with national standards is needed.

China's current education mode cannot meet the current requirements for the number and quality of APE teachers, and neither can it meet the goal of developing



inclusive education. However, these problems can be solved by establishing an APE teachers' certification system that is similar to the United States.

Keywords: Adapted physical education, Inclusive education, Certification system



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Chapter One

Introduction

1. Background of the Study

1.1 International Trend: from Special Education to Inclusive Education

According to the World Health Organization, there are approximately 500 million handicapped people in the world; this accounts for about 10% of the population on this planet. At present China has about 80 million handicapped people, and this is increasing by about 700-800 thousand every year (CPRD, 2012). Since they are also part of society, they are also investors in public wealth and should therefore have the same rights as people without disabilities. Physical Education is a common cultural heritage for every person because it can foster our physical and spiritual qualities; which is why most countries have enacted laws and regulations to ensure that disabled people can enjoy physical education and sporting activities.

Most countries adhere to the Convention on the Rights of Persons with Disabilities; this convention was drafted by the United Nations and has received recognition and is enforced by all member nations. This convention stipulates that every member nation should promote, protect, and make sure that everyone with disabilities can fully, equally, and lawfully enjoy their fundamental freedoms and human rights; and also promote respect for inherent dignity of individuals with disabilities.

In 1994, more than 300 participants representing 92 governments and 25 international organizations converged in Salamanca to promote the objectives of "Education for All". They considered how to allow schools to serve every child, particularly students with special educational needs, and also the fundamental policy needed to promote the teaching of 'Inclusive Education'. The Salamanca Statement was adopted by the Conference on Policy, Practice and Principles in Special Needs Education and a Framework for Action. The Salamanca Conference provided a unique opportunity for millions of children deprived of an education for a long time to access the wider framework of the "Education for All" movement. The purpose is nothing less than an inclusion of children of all the globe in schools and a reform of the school system, and the

concept of "Inclusive School" has been led to by this motivation. The challenge confronting the concept of "Inclusive School" is that of developing that for a child-centered pedagogy is able to educating every child, even those with serious disadvantages and disabilities.

To offer a property basic education to all children is nowadays a globally accepted reality (World Declaration on Education for All, 1990; Delhi Declaration, 1993). Developing countries nowadays concentrate on participation and access to a reasonable level of accomplishment, while developed countries focus on enhancing their achievement qualities. A second trend is also discernible; a parallel system of special and ordinary schools has been operated by school systems in developed countries historically, but they are directly moving from "mainstreaming" and "integration" towards "Inclusive Schools" (Ainscow, 1993). For school systems in developing countries to formulate inclusive schools is an inevitable selection, because the goal for both is to modify effective schools for every child, even those with special needs, but planning and putting into effect this qualitative change to the education system is a challenging task (Jangira, 1995).

Although the aim of arranging effectual schools for everybody is ordinary to all nations, the nature and magnitude of the task will vary relying on whether it is a developed or developing country. (Sultana et al., 2007)

The school system need to transfer to enable it to respond to all children's educational needs, including those with special needs. Each school should accept that it needs to cater to every child in its community. This fundamental shift in school policy is to be accompanied through curriculum reform to make sure accessibility to all kids; reform of teacher education to equip mainstream instructors with the abilities and appropriate knowledge; and establishing a support system (Jangira, 1995).

In the United States, as early as 2000, 95.9% of students with special needs receive special education and relevant services in a regular school environment. Close to 96% students with disabilities go to regular schools, while only 4% attend special schools or other facilities for student with special needs. Most of those students (going to regular schools) are educated in regular classes with supports and appropriate aids, such as designated periods of time where they can meet with a qualified special education teacher. Around half of all students with disabilities

spend 80 per cent or more of their day in regular class-rooms (U.S. Department of Education).

In Turkey, the number of primary school students with special needs in inclusive class-rooms was 40,050 in 2004–2005, but in the 2010-2011 school year the overall number of students in inclusive settings grew to 92,355.(Orhan. C & Macid. A. M, 2013)

Although the development of inclusive education in Taiwan is not as fast as the United States and Europe, it has made a lot of progress in some aspects, and is now one of the best areas in Asia where inclusive education has been implemented. According to the statistics, in the 2011 academic year there were 4575 students with physical disability, of which 4359 students (about 95%) receive an education service in regular schools. (Ke, etc. 2011)

2. Current situation in mainland China

2.1 Demand of people with disability in Mainland China for Compulsory Education

In the 25th files of China's Disabled Person's Federation, and according to the sixth national census and the second national handicapped person sampling survey, people with any type of disability are part of the total population. At the end of 2010 there were 85.02 million disabled people in China, of which 12.63 million had a vision disability, 20.54 million had a hearing disability, 1.3 million had a speech disability, 24.72 million had physical disabilities, 5.68 million had mental disabilities, and 13.86 million had multiple disabilities. This means there are 25.18 million graded as severely or moderately disabled, and 59.84 million with mild disabilities (CPRD, 2011).

The national bureau of statistics released (2007) stated there are 2.46 million school age children (6 - 14) with disabilities, which accounts for 2.96% of the total number of children with disabilities. Of these children with disabilities, 63.19% attend a general school or special schools to receive compulsory education. These children with disabilities are in the following proportions: 79.07% with a vision disability, 85.05% with a hearing disability, 76.92% with a speech disability, 80.36% with physical disabilities, 64.86% with intellectual disabilities, 69.42% with mental

disabilities, and 40.99% with multiple disabilities. The total number of people with disabilities living in cities and towns is about 20.71 million, which is approximately 24.96%, people with disabilities in rural areas is about 62.25 million, which is approximately 75.04%. If “in school-age children with disabilities, 63.19% are in general school or special schools to receive compulsory education” is correct, the number of children who should receive a compulsory education in schools is about 1.55 million. But according to the “China Education Yearbook 2007”, in that year the number of students with disabilities being educated in schools is about 419300, so there were a lot of school age children with disabilities who did not enter any school. For example, in 2009 in the province of Jiangxi, there were more than 230,000 children with disabilities from 0 - 15 years old, of which only 120,000 were attending schools. (Yao & Jiang, 2009)

2.2 Special education in China is moving towards the inclusive education

In 1994 the "world conference on special needs education" was held in Salamanca, Spain. It was hosted by the United Nations educational, scientific and cultural organization, which adopted the "declaration of Salamanca", formally put forward the concept of “inclusive education ”, and called on all countries to carry out inclusive education. China agreed to this in principle but then conducted research into the practice of inclusive education. Over the past 30 years the government built a research center for inclusive education to better meet the educational needs of students with special needs. From these beginnings a lot of researchers published a large number of articles and monographs, some related educational organizations held systematic lectures and seminars, and some colleges and universities began to cultivate researchers and practitioners engaged in inclusive education.

From the historical data of the China education statistical yearbook 2001, the number of students learning in a regular classroom and learning in a special class in regular schools accounted for over 60% of the total figure of students with disabilities. Moreover, data from the “China education statistical yearbook – 2011” shows there are 110165 students learning in special schools, 269919 students in regular classes, and 6276 students learning in a special class in a regular school. But in this period there were almost 126,000 school age children with disabilities

still not at school; this means that almost one third of the number of students are in school.

After more than 20 years of development, inclusive education in mainland China by way of “learning in the regular class” has made a lot of progress. Many students with disabilities can now engage and learn at a regular school, which has increased the schooling rate of children with disabilities and also satisfies the needs of children with disabilities to accept an “adapted” education. This progress has helped mainland China to develop a pattern of special education for a “certain number of special schools as a backbone where many students are learning in regular schools or special classes in regular schools as the main body” (CDPF, 2007).

While the number of students who already accept inclusive education is less 400,000, compared to the 2.46 million school age children with disabilities, the percentage of school age children with disabilities in mainland China who receive an inclusive education service is about 16.2%. If using generalized but with special needs students as the object of inclusive education, (Ordinary special needs include learning disabilities, communication disorders, behavioral and emotional disorders, physical disabilities, and developmental disabilities, from New Zealand’s Ministry of Education, 2010), then the number of students in mainland China with special needs will far exceed 2.46 million. The United States department of education points out that the proportion of students with special needs accounts for about 10% of the total number of school age children. If we take the ratio calculated in accordance with the United States, China may have 20 million children with special needs, while the proportion of students who received inclusive education fell to only 2%. From 16.2% to 2% is a very large gap for Chinese government to bridge, which means the schooling rate of school age children with disabilities has reached 80%, and this does not consider the schooling rate of students with disabilities in developed countries such as the United States, Britain, and Australia.

2.3 Existing problems about Adapted Physical Education in Mainland China

Although special education in China has made a lot of progress the following problems remain:

- a) the development of China's adapted physical education is slower than the world trend.

Integration is exclusively a primary phase in the development of inclusive education, or inclusive education is the purpose in which integration must develop. Because inclusive education is at a higher level, more universality of the idea of education has more profound educational and social significance (Huang, 2002), development in Mainland China did not follow this mode.

b) The number of existing special physical education teachers needed and the speed of training speed cannot be met. According to an academic survey for 76 schools in Mainland China, there are 210 teachers teaching 13,047 students with special needs. The Student to faculty ratio is 1:62, but the international standard for now is usually 1:15 (He. etc, 2010) . Teachers mainly graduated with special physical education majors from normal colleges and sports colleges, all of which require 4 years schooling. The obvious disadvantages are less enrollments and a long training cycle for potential teachers (Wu, 2003).

c) Because the demand for a lot special teachers is high, a lot of unqualified people enter the teaching profession; in fact, many existing PE teachers graduated from other majors, so most have no training or experience in teaching special physical education skills (He. 2010, Zhou. 2007) .

d) The knowledge structure and professional qualities of existing special physical educators are not enough because a lot of students with special needs who studied in integrated schools were excluded from the physical education class because their PE teachers did not adapt to physical education related skills. (Wu, 2009)

e) Lack of professional development and vocational training for already adapted physical educators; many teachers have never participated in any relevant skill training after being hired (He, 2010) because existing training emphasizes theory, so there is a lack of skill and practical training. (Wang, 2012)

3. Purpose of this Study

3.1 Research Aims

This project seeks to examine how Adapted Physical Education Teachers' Qualification

System has been established in China. The objective is to survey the development of qualification system of the adapted physical education teachers to find out a appropriate instruction for China. This research will discuss the limitations and advantages in these situations, and also help promote the grade of adapted physical education in China.

The purpose of the research is divided into 3 parts:

- a) Research the overarching development of APE and demand for Adapted PE teachers.
- b) Investigate the situation of APE in China and compare it to the latest theoretical developments.
- c) Investigate a certification system to improve current APE teacher preparation and quality control.

3.2 Significance of this Study

The aim of this project is to find a way to investigate and develop qualification system of an adapted physical education teachers in mainland China. While qualification system of the Adapted Physical Education teachers is an indispensable part of qualification system of the prevalent teachers, the relationship between these two systems, such as the relationship between education and adapted physical education, also has got a subordinate relationship.

If this system can be established, it could alleviate the problems of adapted physical education that currently exist in China. It could also improve the quantity and quality physical education teachers. This is not only to help vulnerable groups eliminate their vulnerability; it is also an embodiment for governments concerned with helping highly vulnerable groups. This should attract the attention of stakeholders so they can give advice the related regulations are made or amended.

- a) Can improve the speed of training teachers and increase number of APE teachers
- b) Raise the APE skill level of teachers and enhance the quality of PE classes
- c) Contribute to solve the existing problem about the lack of special physical educators.

d) Contribute to improve and ensure the quality of Adapted physical educators, and promote inclusive physical education in Mainland China.

e) Give suggestions to future relative researches.

4. Term explanations

4.1 What is the APE qualification system?

Qualification system of the adapted physical education teachers is part of professional qualification system of the teachers; it commonly means that the administrative department (relevant government management institutions or professional organization of teacher), will formulate verification and relevant authentication of the standard in accordance with the need for special physical education teachers to have skills and adequate knowledge. It will also arrange assessments or reviews of those people wanting to obtain qualification of the adapted physical education teachers, award the special qualification, admit that he or she has the knowledge and skills needed to meet the requirements of adapted physical education and can perform these responsibilities. This system comprises reviewing qualifications of the adapted physical teachers and formulating the related assessment criteria.

4.2 Inclusive education

The introduction on the Website of Development Database and Disability (2014), states that inclusive education program helps students with disabilities to attend at local, mainstream, neighborhood schools to study with students without disability in the same class-rooms. This project took effect when school officials, government departments, parents, communities and other stakeholders combined to train the teachers, make the grounds and school building approachable, and also enhance the comprehensive academic curriculum for all students. The auxiliary equipment or proper teaching materials can also be used by children with disabilities. These attempts to improve the learning environment enables children with and without disabilities to learn together in the same classroom; in this environment everyone benefits by improving the teaching method, by having barrier-free facilities, and a wide range of courses.

4.3 Whole school approach

A whole school approach is a cohesive, collective, and collaborative operation in and by a school community that has been strategically built to enhance pupil learning, behavior and well-being and the environments giving support to them. (Department of Education of Australia, 2009). A whole school approach is a further concept of inclusive education developed to constitute the basis of inclusive education, and help accomplish inclusive education better. Under this way the whole school will come together with different roles and at different grades, to give support to each other, care for students' various kinds of learning needs, and to establish culture and an harmonious and inclusive community condition throughout this process.

4.4 Integrated education

According to Jennifer et al, (1992) Integrated education programs means that students with disabilities can learn in special courses or as units in mainstream schools, but all the students can socialize outside the class-room. Students with disabilities can adopt the same curriculum or a adapted curriculum as regular students, before inclusive education is fully produced, being decided by school policy. Integrated education may be used as a transitional preparation, or it may be an end in itself and there are no plans to evolve into inclusive education. How the concept of 'inclusive education' advances from integrated education (e.g., modifying the whole learns condition instead of setting disabled pupils in a separate learning condition) relies on the school's policy or the government. This means there are a number of similarities but few differences between integrated education and inclusive education, but their borderlines are not huge and insurmountable.

Chapter Two

Literature Review

1. Development of adapted physical activity

1.1 Derivation of adapted physical activity

The English word “adapted” is an adverb and hence is an extension of the word “adapt”, which is a process of adjusting or modifying to make something suitable for special situations or individuals; it can also be seen as the benefits deriving from adjusted plans or services. It first appeared as the latest definition of sports for the disabled by the American Alliance for Health, Physical Education and recreation (AAHPER) in 1952, where the word “adapted” replaced definitions such as “corrective” and “modified” when pertaining to individualized assessment and planning. This term “adapted” originated from the child psychologist Piaget, who used adaption as the basic concept for his development theories because he believes that adaption will help individuals interact with their circumstances. The original definition of adapted physical activity has undergone significant changes over the past century, especially the last four decades. In the 1960s, the concept of special physical education was generally used in America in the field of special needs education and focused on the physical education services provided to students with special needs. In the 1980s, special physical education was replaced by adapted physical activity to better reflect society’s attitude towards the disabled in different periods, as well as changes in the social, political, and historical background. Pyfer (1986) believes that our understanding of adapted physical activity commenced from the 1950s, research into how to test the sporting development of students with mental retardation began earlier than that. There are different opinions and explanations of adapted physical activity and the development of abundant practices and knowledge, of which the “adapted physical activity” used by the International Federation for Adapted Physical Education founded in Quebec, Canada, by Canada, Belgium, and America in 1973, is considered to be the first time this concept was officially used internationally.

The President of the International Federation for Adapted Physical Education, and famous American adapted physical activity expert Claudine Sherrill (1976), defines adapted physical

activity as “a science to analyze sports and determine the issues in psychomotor field, and a developmental guiding strategy to fix problems and adhere to ego strength”.

The 1980s was the decade where researchers of adapted physical activity began to consider this field as a discipline. Since the foundation of the International Federation for Adapted Physical Activity (IFAPA) in 1973, academic organizations were founded successively in Europe and Asia to research adapted physical activity. These professional organizations promoted what are now the standard and scientific processes for academic research, and the subsequent emergence of degree programs, occupational standards, international adaptive physical activity conference systems, and the first issue of the professional and academic journal, the Adapted Physical Activity Quarterly in 1984, these milestones have had a significant influence on the development of research in adapted physical activity. As the birthplace of adapted physical activity, America has a leading role in theoretical research and academic development; since the 1960s many universities commenced adapted physical activity courses, and in 1969, they began to cultivate master and doctor degrees of adapted physical activity; they also gradually formed a curriculum system and professional training specifications. In 1995 in America, NCPERID, a professional organization for adapted physical activity hired 385 experts from 40 states and spent 5 years composing the detailed contents of 15 specifications to promote adapted physical activity teachers. This specification is now known as the Adapted Physical Education National Standards (APENS), and is the foundation for adapted physical education volunteer qualification examination in America. Moreover, this standard is also the training model for adapted physical education teachers all over the world.

In 1991 the Erasmus -Mundus Master in Adapted Physical Activity, directed by Prof. H. Von Copenolle of Katholieke Universiteit Leuven Belgium was the first program in Europe to cultivate a Master in Adapted Physical Activity, and now, as a cooperative education mode, Palacky University, Olomouc, the University of Limerick, Ireland, and the Norwegian school of sport sciences, Oslo, are all partner schools of this program.

This program was extended in 2005 to cultivate international adapted physical activity planning, and the University of Queensland (Brisbane, Australia), the University of Stellenbosch (South Africa), and the University of Virginia (USA) have become partner schools outside the

European Union; they now enroll students from all around the world and recruit internationally known scholars as teachers of adapted physical activity. After decades of development, this program has helped to intensify research into adapted physical activity by cultivating specialists in adapted physical activity, by providing academic exchange globally, and by perfecting the course system and establishing an occupational standard in adapted physical activity in Europe to promote the development of international adapted physical activity.

Dr. Doll-Tepper (1989), who is president of the International Council of Sport Science and Physical Education, and famous adapted physical activity specialist in Germany, defined adapted physical activity as “physical activity and sport in which special emphasis is placed on the interests and capabilities of individuals with limited conditions, such as disability, health damage and aging.” This definition represents the opinions of most European scholars. The curriculum standard in the program for adapted physical activity at California University defines adapted physical activity as a kind of physical education designed to meet the special needs of disabled students who cannot fully or partially complete a general physical education program. Adapted physical activity planning is usually carried out by professionals who have a special certificate; they will cooperate with other teaching staff at schools, including general physical education teachers, special class teachers, and educational counselors. They will provide a consultation service to working staff in the school, to parents, medical staff and social institutions, to help them establish supplementary assistance, service the system or modify plans, in order to help disabled students participate in general physical education programs, or design special physical education programs for them.

Taiwan’s adapted physical activity scholar and professor of the National Taiwan Normal University, Keh Nyit Chin, believes that adapted physical activity is an attitude towards physical education such that it becomes an all-around education service transmission system, and a knowledge system emphasizing detection, assessment, and corrective therapy for motion problems.

Claudine Sherrill defines adapted physical activity as an interdisciplinary domain which helps to identify and solve lifelong psychomotor problems, and puts forward for the first time the concept of a lifelong integration of disciplines. Later in 1994, DePauw and Sherrill further defined

adapted physical activity as “cross-disciplinary theory and practice related to, (a) assess and solve lifelong psychomotor problems; (b) share a positive life style, equally participate in leisure sports, obtain high quality physical education and instruction, and participate in physical activity, dance, water sports for life; (c) connect school-community service to integrate.” In comparison to the definition of 1976, the author believes that the new definition emphasizes individual differences and environment integration rather than disability. This new definition highlights the lifespan concept, and considers adapted physical activity as a cross-disciplinary knowledge system rather than a subject, which is a great leap forward in the understanding.

The International Council of Sport Science and Physical Education defined adapted physical activity in the Directory of Sports Science 2002 as a, “widely used term, including interdisciplinary field of specialized knowledge and technology, covering physical education, leisure and recreation, dance, sports and adaption and repair of damage to individuals for life.” “Its interdisciplinary knowledge structure includes verifying and solving life-long motion problems; developing and implementing advocate and theoretical support of sports and positive lifestyle, as well as innovation and cooperation among family-school-community service cohesion and authorization system”.

2. Present development of adapted physical activity in China

2.1 Theoretical research into adapted physical activity

The theoretical research into adapted physical activity in China is based on research by domestic scholars into sports for the disabled, and this can be traced to a simple discussion about the Paralympic Games by Professor Maijiu Tian that was published on the People’s Daily in the 1980s, and a Discussion in Sports for the Disabled that was published on Sports Daily on August 8th. This was the first literature in China which studied sports for the disabled, as well as being the first systematic introduction to sports for the disabled. A tentative study into Sports for the Disabled by Professor Maijiu Tian that was published in Sports Science issue #4 in 1985, is the first paper where sports for the disabled was actually researched. This paper describes the present situation of sports for the disabled internationally, including the significance and assumption of

continuing to have sports for the disabled in China, and puts forward the principles which should be followed, i.e., security, economy, and distinctiveness. It also proposes setting up physical education courses for the disabled at physical education colleges, forming disciplines and specialties, developing physical education for rehabilitation, fitness, and athletics, and also presents a variety of sports for the disabled that urgently need support and instruction from scientific research. Professor Maijiu Tian opened the door to studying physical education for disabled people using the knowledge of physical education he learned in Germany when the understanding of physical education for the disabled in China did not exist.

In the scholarly researches of the last 20 years in China it is easy to see the focus on “present situations of sports for the disabled”, “physical training and athletics for the disabled”, “physical education for the disabled/special physical education” and etc., because these phrases appear 103 times, 66 times, and 28 times, respectively (Jin, 2013). They mainly focus on descriptions of the present situation with physical education for the disabled and special physical education in different regions of China, while basic research into sport for the disabled is non-existent.

For example, Jin Xiulan (2013) found after researching “sport for the disabled,” there were huge differences in the quantity and quality of research literature on sports for disabled people compared the amount of literature on sports for healthy people. In fact the frequently cited and downloaded literature indicates that the developmental status, sporting events, and the physical education and guarantee of sporting rights for disabled people are the 5 biggest concerns listed in the researches. Meanwhile, research in China is still a simple qualitative analysis, there is a distinct lack for quantitative research, so the research methods are simplistic and lack any significant achievements in deeper research. For instance, Zheng Zhaolong (2010) pointed out in “Research Summary on Sports for Disabled” that theoretical research does not keep pace with the times and lacks depth; that research into training methods and equipment is still weak; this means the psychology of physical education for the disabled must be strengthened, research into sports for rural disabled people should be developed, and research into the physical education resources needed in special schools should be explored.

Some scholars in China have reviewed international adapted physical activity and believe it has developed into a mature discipline, and while the concept and related theories were introduced

in the late 1990s, development is still in initial stages. The width and depth of theoretical research, including the methods and approaches, the size and quality of research groups, and the quantity and quality of research achievements, etc., still have a long way to go to keep pace with international research. A preliminary study of domestic scholars showed that the research of adapted physical activity is mainly descriptive, there is no empirical research; and while problems such as the undefined theoretical system of sports for the disabled, the lagging behind in theoretical research in sports for the disabled, and the shortage of professionals, has become the bottleneck that is retarding the development of this discipline (Lu, 2009). Some scholars have discussed the possibility and feasibility of constructing adapted physical activity in China via the educational field, adapted physical activity practice, and social development, have also proposed to enhance research in basic theories and gradually establish adapted physical activity theory with Chinese characteristics (Lu, 2007,. He, 2010).

2.2 Development of an adapted physical activity discipline

The discipline of adapted physical activity in China is still in its initial stages, but ever since the special physical education direction for a physical education major was set up in the Tianjin Institute of Physical Education in 2001, the Institutes of Physical Education in Xi'an, Shandong, Guangzhou, and Wuhan have also set up special physical education majors. Moreover, many domestic normal schools have set up appropriate bachelor degrees for special physical education, while Fujian Normal University, Suzhou University and other normal and comprehensive universities have set up related master and doctor degrees, all of which form a system cultivating talents from bachelor to doctor degree with an adapted physical activity/special physical activity major. However, since there is no discipline of adapted physical activity in China, the establishment of a course system, and the cultivation of talents with real adapted physical activities are still based on special education majors, not an independent discipline system. Beijing Sport University, supported by the China Disability Sports Center, is preparing to add an adapted physical activity major, and this will help to cultivate adapted physical activity talents while building the foundation and development of this discipline.

2.3 Organizations of adapted physical activity

The first Special Olympics research center founded in Fujian in 2010, and the China Disability Sports Center of Beijing Sport University founded in 2011, marked a new level of research in adapted physical activity that will promote the research and development of scientific research into disability sports in China. The China Sport Science Society, the largest and highest level of sport science and academic technology society has 18 branches and 2 editorial committees at present, including a sport social science branch, and a science of sports training branch, etc., (Jin, 2015). Adapted physical activity has always drifted between sport social science and sports and health related branches, into which branch it actually belongs has yet to be determined. This is why scholars have also proposed that adapted physical activity should be listed separately, in accordance with international convention.

3. Related Studies on a License or Certification System

Credentials refer to documentary evidence with legal validity which attests to a person's ability in a certain aspect. Currently, there are two main definitions for international credentials; one is "License" and the other is "certification".

Jordan pointed out in a policy analysis for the American Association of Colleges for Teacher Education (AACTE) that "License" is a legal document which indicates that the bearer has the prerequisite skills and abilities needed to perform the task, whereas "certification" is a non-legal document which indicates that the bearer has a higher capacity that is recognized by professional staff. (Summerhill, A., et al, 1998)

The Teacher Qualification System, also known as Teacher Certification system, is a statutory licensing system for professional practice which stipulates the basic requirements needed by professional staff engaged in the education and teaching sectors. Since the 1960s, a massive wave of teacher professionalism has swept western countries, to the extent whereby it has become a trend to establish a teacher qualification system for developing teachers' education around the world.

Teaching certificates are the basic requirements needed by professional staff who specialize in the education and teaching sectors, and the legal prerequisites that citizens need to acquire teaching positions. After this qualification system has been fully implemented, only those who legally obtain and hold teaching qualifications can engage in education and teaching work at schools and other educational institutions that have been established by the administrative department of education in accordance with the law. Those without teaching qualifications cannot be part of the teaching profession, but this qualification is merely an essential condition for holding a teaching position because having the qualifications does not mean being employed as a teacher; it is only after being appointed by schools or other educational institutions do they become teachers. Nevertheless, the imperfections of the existing system mean that some without qualifications have already taught at school, so they are in reality, teachers.

3.1 Domestic teachers and other certification systems

3.1.1 Evolution and the current conditions of the domestic teaching certification system

Although China decided to implement a teacher qualification system in 1986, teaching certificates for in-service teachers on December 31, 1993 were officially issued in 1997, a decade later. Since the conditions and requirements for teachers of any level were stricter than those for corresponding teaching qualifications, in-service teachers in the transition range could obtain qualifications if they passed the appraisal for two consecutive years. According to data on the Ministry of Education website, as of 2013, the number of national teaching and administrative staff was 17,816,113, of whom 14,422,979 were full time teachers. Reform of the teacher education system and implementation of the Teacher Certification System to promote diverse sources of teachers, enhances high quality reserve teachers, while providing a system that will guarantee a wide range of teacher education systems while becoming an important way to improve the quality of our teachers.

Teaching certificates in China include qualifications for teaching kindergarten, primary school, junior high school, senior high school, secondary vocational school, secondary vocational school student teacher, and colleges and universities. Teaching qualifications are categorized, they

are not based on types of schools or subjects, or in accordance with how long teachers work or which grades they teach. Obscure stipulations regarding the scope of the application of teaching qualifications such as whether they can be used for different grades or subjects, and how to use them correctly, leads to teachers disregarding teaching certificates and giving lessons with certificates for other subjects. Teacher certification is a single qualified system that focuses on new teachers; it only determines the most basic requirements for employment and mainly solves the problem of employment and the entrance of teachers. Nonetheless, without considering professional development and updating knowledge, teacher certification is not combined with continuing education and increasing teaching levels, so it lacks the incentives needed to develop the teaching profession, which leads to an inability to meet the demands schools place on teachers at different levels, and to ensure the quality of the teaching profession.

3.1.2 The current condition for implementing relevant certification systems for domestic sports - Social Sports Instructor

At present there are two kinds of social sports instructors; voluntary staff who mostly organize, guide, and supervise sports activities on city streets and in parks. They can obtain certificates to be social sports instructors from the Sports Bureau by attending training courses given by the District or County Sports Bureau, and by qualifying for the examinations and applying to the Sports Bureau, pursuant to "Technical Level System for Social Sports Instructors".

The other are social sports instructors who offer guidance on fitness and who can gain job qualification certificates by completing vocational qualification training on specific types of the work in the sports sector.

On December 4, 1993, the former National Sports Commission promulgated the "Rules on the Technical Levels for Social Sports instructor", thus marking the formal establishment of the national social sports instructor system in China. (Zeng, 2009) As defined in the "Rules" issued by the state, social sports instructors refer to professional staff who impart skills, guide exercises, and organize and manage mass all sports activities except competitive sports, school sports, and

forces." Therefore, those who meet the conditions and carry out the responsibilities of social sports instructors may apply for and obtain the technical levels required for a social sports instructor, in accordance with the relevant rules.

"Rules" stipulate national professional standards for social sports instructors: first-level social sports instructor, second-level social sports instructor, third-level social sports instructor, and national social sports instructor. Each level has its own unique requirements and regulations so social sports instructors can follow the rules and apply step by step.

"Rules" also defines the important role that social sports instructors play and also encourages the work and enhancement of a construction management for legislative intent. Its brief contains 19 provisions, these include the scope, levels, titles, conditions, standards, training, assessment, application, approval, methods of guidance and work management. From 1994 to 2000, Shanxi, Shanghai, Henan, Gansu, Inner Mongolia, Ningxia, Zhejiang, Heilongjiang and other places successively developed and implemented the "Rules" based on normative documents of the local governments or sports departments. The Department of Mass Sports, General Administration of Sport of China pointed out in a summary of the first phase of the Outline of the Nationwide Body-Building Plan that by the year 2000 there were almost 200,000 social sports instructors at all levels, and they have become an important force in carrying out social sports activities. (Zeng, 2009)

As an important part of the employment system, the vocational qualification certificate system is subject to the objective, impartial, scientific, and standardized evaluation of workers' skill level or occupational qualifications from appraisal and accrediting bodies, in accordance with the national standards of vocational skills or qualifications. Since the establishment of a vocational qualification certificate system in 1993, its legal status has been given to the country to implement the system as part of the "Labor Law" and "Vocational Education Act". In the continuous development of China's market economy and social management, the scope of the vocational qualification certificate system continues to expand and is gradually absorbing the sports industry.

This gradual emergence of a sports fitness service sector coincides with the growing social and industrial development of our sport. As the demands on mass sports and fitness increases, the

development of a sports market and increasing numbers of commercial sports and fitness venues and activities, and rapidly growing number of consumer groups, means that the demand for guidance from professional sports fitness services continues to increase, and thus the establishment of teams to guide professional sports fitness and the confirmation and management of this system has turned into real needs. (LI Xiu-xia, 2005)

In October, 1999 the General Administration of Sport of China, now entrusted by the former Labor and Social Security Department, teamed up with related personnel from Beijing Sport University and the Capital University of Physical Education to establish a research and development institution for "social sports instructor vocational qualification certificate system." This administration set about formulating national professional standards for social sports "(referred to as" professional standards ")", by establishing a system to evaluate the vocational skills of social sports instructors, and preparing supporting documents and outline materials for its implementation.

On August 7, 2001, the Labor and Social Security Department promulgated and implemented these "professional standards". These standards define the role of occupational social sports instructors and occupational levels, and stipulate occupational standards for social sports instructors; this includes the occupation profile, basic requirements, responsibilities, and proportional tables. According to the deployment of the General Administration of Sport of China, pilot projects were carried out soon after the "professional standards" were enacted. Tianjin Sports Bureau took the lead and set up an occupational skill testing station for the sports industry in cooperation with the labor bureau in June 2003, by organizing vocational training and an assessment of qualifications. (Xinhuanet, 2003) This pilot work had also been progressing in other areas.

In 2005 the social sports instructor vocational qualification certificate system moved forward rapidly as occupational skill testing stations for the sports industry were established in seven provinces (districts and municipalities), a batch of training units with which to determine the outline for assessment, textbooks, and question banks from some items of sports and training assessors commenced. In 2006, the General Administration of Sport of China held its first conference to assess sports vocational skills and issue suggestions and supportive documents to

enhance the assessment of sports vocational skills. In March 2006, the first national vocational qualification certificate of skiing for social sports instructors was issued, and by 2009, there were more than 8,000 occupational social sports instructors active in a variety of positions as vocational fitness instructors.

After revising the decision making process the General Administration of Sport of China issued Regulations (No. 16) on October 9, 2011 and it came into force on November 9. After implementing these Regulations the “Rules” were annulled because the “Regulations” stipulated they applied to social sports instructors engaged in voluntary services for nationwide fitness programs without remuneration. These regulations were briefly named “regulations on social sports instructors”, they were not directed at the management of social sports instructors, they took the working relationship in social sports instructors in every aspect, as objects for adjustment.

As the “Regulations” have been implemented over the past two years, the work of social sports instructors has moved far enough forward to produce an effect, i.e., (1) Local associations for social sports instructors shall be established. In 2013, the number of provincial associations for social sports instructors increased from 6 to 23 before the Regulations were implemented. City and county-level associations for social sports instructors were gradually established, and they gradually carried out more and more activities as their role expanded. (2) The work of social sports instructors was more interactive because they had to develop mass fitness organizations. The Department of Mass Sports and General Administration of Sport for China began to construct grassroots organizations such as sites for mass fitness activities by promoting some local experience and establishing a position and platform where social sports instructors can play their role. (3) The quality of training for social sports instructors gradually improved as it continued to expand; in fact the General Administration of Sport of China issued a notice to further strengthen the training, and also compile and publish a new version of the training materials, so training continued to intensify to embrace quantity and quality. By the end of 2012 the number of registered social sports instructors was almost 1,050,000, while training and education continued to be activated. (Yu, 2013)

3.2 Introduction of American Teaching Certification System

Ordinary Teaching Certificates refer to those credentials held by teachers in schools who have formal qualifications, and which are classified based on subjects, grades, and levels. Those in the states of America are categorized according to teachers' subjects and responsibilities. Generally speaking, the courses offered in public schools are taught by teachers with the appropriate certificates, while the positions for school management and school services are also undertaken by staff holding appropriate qualifications (Robert, 2001); these qualifications can be summed up by the following categories.

3.2.1 Teaching certificates classified by subjects and responsibilities

A) Certificates of general education courses

General education courses in the US can be divided into categories such as integrated subjects, languages, science subjects, social studies, and art and sports, each of which has corresponding teaching certificates. In some states these certificates may only pertain to certain subjects such as a maths or English, but in many others these teaching certificates include a plurality of subjects. For instance, if a maths teacher wants to teach physics they must meet the certification standards required by physics teachers, which differs from the certification needed to teach mathematics, so while there is no need to re-certify other standards, the qualifications needed to teach physics can be added to the original certificate.

B) Vocational and Technical Education subjects

There are two types of vocational and technical education subjects in basic US education: vocational courses offered to popularize science and technology and teach students basic skills, and courses on specialized skills in preparation for employment, which feature more elective courses. The former subjects include agriculture, commerce, industry and technology, while the latter covers a broader range of subjects in various industries and fields. These subjects also have corresponding teaching certificates.

C) Special Education Certificate

There are also two types of special education certificates: a certificate in education for

children with physical or mental abnormalities, and a certificate in education for children with a background in special education. The former covers certificates for educating kids with mental disorders, language disorders, hearing impairment, and special learning disabilities. The latter has certificates for teaching non- English students English, as well as gifted students. There are also specially designed teaching certificates based on children with different types of abnormalities and even teaching certificates in line with the degree of abnormality, such as certificates in education for children in Missouri with slight, moderate, and severe disabilities.

D) Certificate of School Services

As well as course teachers, there are still some personnel engaged in teaching and student services who are also an essential part of school education, but they must hold qualification certificates before being in office. Staff working in teaching services mainly include personnel in technical education and information services in libraries, each with their own qualification certificates. Student services personnel cover psychological counseling and guidance, career counseling and guidance, school nutritionists, doctors, and social workers, each having their own qualification certificates.

E) School Management Certificate

School management certificates refer to qualifications held by staff responsible for directing, operating, supervising, and managing daily education activities. In line with management objectives, these certificates can include local school education administrator or the school district superintendent certificates, primary schools, secondary schools and senior high schools, and special school administrator certificates. By function, they have a principal certificate and a dean certificate. According to the level, there are general manager certificate and senior manager certificate. Under normal circumstances, the holders of administrative certificates must have a wealth of experience in teaching and have received specialized training in educational management. Another is a school counselor certificate which is issued to officials or education experts with a lot of experience in school education or management, and whose duty is to put forward reasonable proposals for school education.

3.2.2 Ordinary teaching certificates by grade or age of students

Teaching Certificates in US states are classified by the grade or age of the students. Classification by grade is more common, such as a pre-school teaching qualification, and primary and secondary school teaching certificates. In some states, these certificates are graded, based on the specialized courses attended during their normal education. For instance, if a teacher has completed courses on teaching students from grade 7-9, they will only obtain a certificate to cover that grade, and normally there is no difference in rank between teachers of diverse grades, and their remuneration is basically the same. This approach ensures equal status for school teachers with a variety of grades, whilst encouraging them to stay and strive to improve their positions. Teaching Certificates in various states are not simply classified based on grades or subjects, but on a combination of grades and subjects, just like highly specialized subjects. Teaching certificates for arts subjects and foreign languages in many states also range from kindergarten to high school.

The State classification of teaching certificates is actually inseparable from the educational concepts they believe in; for instance, some states don't completely separate pre-school teaching certificates from the primary school teaching certificates because they believe that pre-school and primary school education should have some continuity, and so too should the teaching certificates. The states are remarkably similar in how they classify teaching certificates; for instance, they generally agree that primary schools should focus more on comprehensive knowledge and secondary schools should focus on specialized knowledge; this means that certificates for teaching integrated subjects for primary school are more common, as are certificates for teaching subjects in secondary schools.

Teaching certificates pertaining to the age of students began in the United States in the 1990s; some believe that since education varies in different grades depending on students' physical and psychological status at different ages, why not then teach based on student ages? Moreover, some subjects are more sensitive for students at different ages so it's clearly inadvisable to have a unified classification. Given this view, the National Board for Professional Teaching Standards(NBPTS) suggests that teacher certification should be divided into levels such as early childhood (3-8 years old), childhood (7-12 years old), pre-adolescent (11-15 years old),

and adolescent (14-18 years old). (Robert, 2001)

3.2.3 Ordinary Teaching Certificate by levels

According to teachers' educational backgrounds, and the results of their performance or assessment, ordinary US teacher certification is divided into different levels. Following the publication of two well-known reports: "A Nation Prepared: Teachers for the 21st Century" and "Tomorrow's Teachers", the United States began to classify the levels of teaching certificates. The former report proposed to issue teaching certificates which determine a criterion to enable teachers to engage in the teaching profession, and senior educational credentials to prove that teachers have met the high standards of teaching. To obtain these two certificates means completing three aspects of the assessment, these include the subjects, educational knowledge and skills, and practical teaching ability, as set out by the National Board for Professional Teaching Standards. These two reports had a great impact on the establishment of the teacher certification system because most states now divide the teaching certificate into two or three levels, as per these two reports. The lowest level is often called the Initial Certificate which is valid for 1-3 years, and is issued to newly recruited trainee teachers; this certificate aims to further examine whether prospective teachers really have the competence and the ability. The second level teaching certificate generally refers to a Continuous Certificate or Secondary Certificate; it is valid for 5-10 years and is issued to regular teachers qualified for education and teaching work. When the certificate expires these teachers must be re-certified and there is no limit on the number of times this can happen. In states which implement a two tier teacher certification system, this certificate is the highest level. In states with a three tier teacher certification system, teachers can apply for the highest tier certificate, commonly known as the Advanced Certificate, when the second tier certificate expires. States generally stipulate their requirements based on teaching results, educational evaluation, in-service training or research, and studies for a higher tier certificate; they also link these certificates to the remuneration to encourage teachers to improve their work and participate in in-service vocational training.

3.2.4 Special Teaching Certificate

A Special Teaching Certificate refers to credentials held by substitute teachers, temporary

teachers, and external teachers; there are three main types.

A) Emergency Teaching Certificate and Alternative Teaching Certificate

Due to the shortage of qualified teachers in some areas (urban slums and multi-ethnic neighborhoods in remote areas), emergency teaching certificates with a 1-2 year period of validity are often available in US states. These certificates are issued to those who fail to meet the conditions for teacher certifications but who want to be a teacher and have certain cultural literacy (usually without teacher education, but with a university degree). In the 1980s, 46 states in the United States were issuing emergency teaching certificates, and because this allowed a lot of people without teaching competency to enter teaching teams, some people requested that such certificates should be canceled in succession. Nevertheless, until 1990 there were 38 states in the United States issuing emergency teaching certificates, but since the 1980s, and due to public criticism, the states began to replace the emergency teaching certificates with alternative teaching certificates, so now 70 per cent of states are using alternative teaching certificates. The difference between these certificates is that an alternative teaching certificate requires those who cannot meet the teaching certification requirements to receive short term orientation before taking office. This orientation includes short term courses on relevant educational and teaching theories given by higher education institutions or school districts. Some states even require short term practical teaching with qualified teachers as instructors. This certificate is then valid for 1-2 years. Although this approach has had a marked effect, teachers with alternative teaching certificates still need to be improved.

B) Provisional Certificate/ Temporary Certificate/Substitute Certificate/Probationary Certificate

A Probationary Certificate refers to short term probationary credentials temporarily issued to people who meet most of requirements on the application or who sought re-certification of their teaching certificates but failed to meet some less critical aspects and hope to get them within a short period of time. Some states call it a substitute certificate or provisional certificate, but most states called it a temporary certificate. This certificate is designed to enable people who basically meet the requirements for teaching certificates to have access to their schools. During this period when provisional certificates are valid, holders can have official teaching certificates if they meet

the unmet conditions. States generally stipulate that provisional teaching certificates shall not be updated, and restrictions on the unmet conditions and the time needed to be made up is proposed. In Alaska, for example, as a multicultural state, people must have received five-semester multicultural or cross-cultural education before obtaining teacher certificates of all kinds. Even if you meet all the other requirements and still don't have a credit from multicultural or cross-cultural education, you can only obtain a temporary teaching certificate.

C) Limited Certificate

Some subjects offered by primary and secondary schools in some states find no corresponding majors in teacher education institutions, so professionals in these sectors must be recruited socially; the certificate issued to these teachers is called a Limited Certificate because the teachers can only teach specialized courses such as military and fire control or teach in a specialized field.

3.3 Means of obtaining teaching certificates

There are usually five ways to acquire teaching certificates in the United States: 1. The traditional mode 2. Submit an application. 3. Apply for an Emergency teaching certificate. 4. Alternative teacher training program 5. Social appointment.

The most common is the traditional model of teacher education where people directly apply for teaching certificates after studying and graduating from teacher training institutions approved by the state educational authority. What are related to this mode are the issues concerning the certification of teacher education institutions. In the United States, how higher education institutions set their majors must be appraised by relevant authorities to qualify for training teachers. The second common way of obtaining teaching certificates is to submit applications directly to the relevant state authorities. Here, applicants must meet the requirements of the certificate they apply for, or be part of the field they teach in and can present enough relevant evidence. This is often the case with applicants from other states, and applicants for special jobs or for some high level qualification certificates. Due to the increase in social mobility, mutual recognition of teaching certificates between states is also receiving more and more attention.

Based on certification standards set by NCATE, many states now recognize the validity of teaching certificates issued by other states. In this mutual recognition system for interstate teaching certificates, individuals who complete teacher orientation and obtain teaching certificates from NCATE accredited teacher training institutions can receive the same level and type of teaching certificates in other states. To solve the problems of mutual recognition for interstate teaching certificates, states cooperate, organize, and jointly work out a formal compact known as the Interstate Certificate Compact (ICC). Under certain conditions, teachers in states which have signed an agreement to recognize teaching certificates are entitled to submit their applications and automatically obtain a new teaching certificate for corresponding positions. There are approximately 30 states which have currently signed one compact or more with at least one other state; these compacts are revised every five years.(Liu, 2004) The third method is the Emergency Teaching Certificate which is issued to individuals or schools with special needs; this is necessary in cases where the supply of teachers for some specific subjects and some remote rural areas is limited.

The fourth way is to obtain teaching certificates through training programs which differ from traditional training. This is designed to : 1) Solve the problem of the shortage of teachers; 2) Attract more talented people to engage with the education sector and thus improve the overall quality of teachers. Unlike traditional training programs, alternative programs are only offered in general comprehensive universities where students may minor in courses on pedagogy at the College of Education after completing their studies in major courses, and then obtain teaching certificates when certain credits have been acquired. This program should be more lenient in major settings and professional requirements than traditional teacher education, particularly with regards to pedagogy.

The fifth way to obtain state teaching certificates is the system of appointing eminent talents which exists in several states. These certificates are issued primarily to individuals with special prestige and who achieve kudos in some specific areas. These individuals with these certificates are allowed to teach, but they are not fully qualified as teachers.

4. Analysis of foreign adapted sports-related certificates system

4.1 Development of Certificates of Adapted Physical Education

The force of society in America enjoys considerable autonomy so the pattern of how sports evolved is dominated by the people, while the government only provides counseling and administrative support. The planning and execution of certificates for American sports professionals with somatopsychic disturbance is carried out by community sports groups with somatopsychic disturbance who also verify and issue such certificates. Since the emphasis is placed on the quality of the groups' work, they have considerable credibility because as a symbol of self-affirmation deemed by the public, certificates are not set to look for jobs, but to make the quality of sport better, and to serve the people. This is why American society regards certificates as an honor and service; it is quite common to own a number of certificates.

The US designs perfect accreditation in the sports certificate system. Various types of civil organizations who issue certificates demand high standards of training and verification work in order to ensure the quality of the issued certificates. The implementation is commissioned by professional sports organizations or schools, so the selection process and assessment criteria are relatively stringent. The government doesn't give special specifications, they are designed entirely by the sports bodies in accordance with their own objectives and services. American sports professionals with somatopsychic disturbance mainly include Certified Adapted Physical Educator (CAPE) and Certified Therapeutic Recreation Specialists (CTRS).

4.1.1 Certified Adapted Physical Educator (CAPE)

Certified adapted physical educators teach the physically and mentally handicapped to participate in sports activities, and therefore they should be educated and able to assess and measure ability, physical condition, and athletic skills of people with somatopsychic disturbances. The Individuals with Disabilities Education Act (IDEA) Amendment stipulates that each student with physical and mental disabilities is entitled to be provided with sporting services. To protect the rights of disabled students they must be taught by qualified PE teachers in accordance with the standards set by related sports associations for people with physical and mental disabilities and leisure activities. The National Consortium for Physical Education for Individuals with

Disabilities (NCPEID) formulates the “Adapted Physical Education National Standards (APENS)” to adapt them to the national standards for sports and to hold national verification tests based on these standards. This system is based on the IDEA Amendment, and is authorized and supported financially by federal legislation.

Prospective applicants must meet four basic requirements before helping to verify the CAPE certification system; they must first present their physical education teaching certificate or license; provide documentary evidence proving more than 200 hour sports courses or teaching physical education at schools for physical and mental disabilities; provide the supervisor or manager's signature; provide the result of surveys related to studying sports for the physically and mentally disabled or credit testimony with the introduction of courses (diploma); and finally, proved the application contract documents. Applicants who meet these basic requirements are candidates to participate in the verification tests, which are held seven times a year and cover 100 multiple choice questions related to specialized knowledge of adapted physical education national standards. Graduates from a four year study of physical and mental disabilities can take the verification tests directly, without a lengthy application process, because their professional quality is recognized. Candidates who successfully pass the test will receive an official certificate and have the right to officially put the honorary CAPE after their names to indicate their professional status. (Sherrill & DePauw, 1997)

4.1.2 Certified Therapeutic Recreation Specialists (CTRS)

The National Council for Therapeutic Recreation Certification (NCTRC), which was founded in 1981, is a non-profit organization that is dedicated to sticking up for consumers' recreation and rehabilitation services and improving the professional quality of CTRS. As an authorized member of NOCA, NCTRC's certification courses were approved and commissioned in 1993 by the NOCA, and now belong to the certificate verification system. In accordance with the voluntary process of verification, an institution or member of a professional organization must meet the standards expected; that is, has minored in a certain standard of professional courses or has work experience in professional fields and passed the test before reaching the NCTRC certification standards in education and experience. This certification system now has 17,000 CTRS in professional medical science and standard certifications, which is just behind music therapists and

occupational therapists.

NCTRC grants the certification standards for task development, works out the criterion for training courses, provides channels for participants and for re-certification, and continuously maintains, leads, and advances the latest research and analysis. As a bridge between the actual standards and professional organizations, it provides professional certificate accreditation. For consumers, executors, policy makers, creative and innovative education, training, research opportunities, NCTRC hopes to create a broader membership and global market certification. (Ashburn, Mann, & Barrett, 1986)

Chapter Three

Research Methodology

This research is a study of the Adapted Physical Education Teachers' Qualification System set up in mainland China as a result of the large number of people with disabilities, students with special needs, and the scarcity of teachers with APE due to the slow speed at which teachers are trained. This study will attempt to discuss the advantages and limitations of this situation, compare the CAPE system abroad and its relevance to China, and also suggest ways of adapting it to our adapted physical educator training. It also seeks to investigate an adapted physical education certification system and promote adapted physical education in mainland China.

1. Participants

Most of the participants in this study are the subjects of the questionnaire research, and consist of almost 100 physical education teachers randomly selected from more than 20 special schools in Shandong province and Guangdong province. The sampling design is a purposive cluster with the criterion being that the participants official have been hired by a special school, either an elementary school or middle school. Questionnaires were issued by visiting the schools and participating in the activities organized by the teachers' association. A total of 100 questionnaires were distributed by recycling 72 questionnaires, so the collection rate is 72%. All the participants in this study are voluntary.

2. Data sources

Two sources of data were used in this research; the first source was the "2013 Education Statistics report of China" (MEPRC, 2014) which summarized all kinds data from the development of Chinese education up to 2013, including the date of special education. This report is the latest related data that can be found, and it is also the most reliable because it was released

by the Chinese government. In this report the data includes the number of special schools, the number of school-age students, and the number of teachers hired in special schools. The second part data source is the SPORTDiscus, Pubmed, Physical Education, and CNKI literature databases which identify relevant studies from the earliest recorded to March 2015. The following key words were used solely, or in various kinds of combinations within a systematic search: adapted physical education, inclusive education, disability, certification, training, motor development, physical activity, and special education. Reference lists from original and review papers were also checked over to identify any further relevant studies.

3. Instruments

3.1 Questionnaire Survey

The author agreed to use the “Questionnaire” for special education school physical education teachers in Fujian province to investigate the part the special-education schools play with existing special physical education teachers. This questionnaire quotes from research from the Special education school physical education teachers' current situation and a path analysis of talent cultivation in Fujian province. It has five parts, the teacher's basic situation, the physical education curriculum and teaching situation, the extracurricular sports activities, sports equipment, and other conditions. A questionnaire compiled in 2012, invited 10 experts of school P.E and special P.E to test the reliability and validity of the questionnaire during the 13th National Higher Normal Colleges and Universities Sports Scientific Thesis Public Lecture at Wuyishan city in Fujian province in July 2012. The test results reached acceptable levels, and the research was published in the first issue of 2013 of Journal of Zhangzhou normal college (JCR science edition).

3.2 Systematic review

In this study, systematic review was used to collect literature on the development of the APE certification system in the United States (including the type of certification, participation requirements, training methods, certification methods and so on) and the situation of special

physical education in mainland China. (Including physical education in special schools and integration schools, number of participants, quality of classes, qualifications of teachers, and availability of relevant training). It attempts to find out the characteristics of the existing certification system in the United States and summarize the characteristics and problems in the current status quo in China and also provide a basis for the follow-up study in this paper. Considering that the research object involves two political systems, societies and cultures that have huge differences and use different languages, literature search and collection will be divided into two separate parts of the United States and China. The United States part of the literature mainly from the database SPORT Discus, Pubmed, Physical Education. The main source of data for China is the CNKI database.

3.3 Four-stage comparative methodology

In this section a four-stage comparative methodology (Bereday, 1966; Jones, 1973) will be used to compare the CAPE system in the United States and in mainland China. This comparison has four stages, Description, Interpretation, Juxtaposition and Comparison.

A description of the foreign school education system and education practice is the first step in comparative education research. Bereday (Bereday, 1966) thought this stage consisted of constantly collecting all kinds of literature, visits to school sporting fields. In this article, data collected from domestic colleges and universities relied mainly on the Internet and contact during author's daily work. Data of the CAPE system and universities in the U.S were collected via the internet.

In this stage of interpretation, the analysis of this education phenomenon is shown in the collected data, but with social science and the humanities, a full study is needed to explain the facts.

Juxtaposition is the real start of the comparative education study; this phase of work is a unified concept that puts a hypothesis forward. This means that after the above two phases, a national education data was collected and analyzed with a purpose, so the data must be systematic and identify the common standards in order to compare them with each other. Data from each area

and country is then collected and classified to analyze the similarities and differences and form a hypothesis of the results.

Comparison is the final phase of comparative education research; its main task is to study all the recipients simultaneously, and they verify this hypothesis by the research results. Bereday divided all the comparisons into two kinds; one is a balance comparison, which refers to a symmetrical comparison between different research areas, equivalent stress data and balance. Another is an interpretative comparison which refers to get an education practice in different countries with a comparative of the meaning of data (Bereday, 1966).

4. Research Design and Procedure

4.1 Systematic review

The systematic review in this study was used to study the worldwide development of CAPE. The United States was selected as the research object because of its historical background and better certification system. This study studied and analyzed the research of adapted physical education certificates to try to realize the extent to which CAPE had developed in the United States.

Collect relates to the paper monograph, research reports, journals, web information in the library of Hong Kong Education University, and the internet. After reading the data was sorted out and discussed as the basis of a comparative study.

Search strategy

The search of English literature was conducted using SPORTDiscus and Physical Education, search of Chinese literature was conducted using CNKI. Several keywords were used to identify relative articles:

- 1) Physical education
- 2) Adapted physical education

- 3) Special physical education
- 4) Adapted physical activity
- 5) Certificate / certification
- 6) Or /2-5
- 7) Development/ innovation
- 8) Model / organization / standard
- 9) Situation / problem
- 10) Or /7-10
- 11) Mainstreaming school / normal school
- 12) Unified school
- 13) Special school
- 14) The USA
- 15) Mainland China
- 16) 2 and 5 and 9 and 15/16
- 17) 3 and 5 and 9 and 14
- 18) 1 and 7 and 12-14
- 19) 2/4 and 8 and 14/15

Selection criteria

Papers were included if they studied the CAPE system in the US or Mainland China. Included studies were required at least one factor of APE including but not limited to history, social awareness, organization, teacher training and certification. Papers were excluded if they were not focused on the specific domain or factor or strategy about APE, or they based on a single case study, or they are not evidence-based.

4.2 Implementation of the questionnaire survey

From February to June 2015, the author distributed 100 questionnaires by mail and by visits, to about 100 teachers who are employed by more than 20 special schools. These schools were randomly selected from cities across the country, such as Guangzhou, Wuhan, Jinan and Zibo. Of these 100 questionnaires, 72 were retrieved, which is a collection rate of 72%. There were also 63 effective questionnaires, which accounts for 90% of the total.

4.3 Mathematical calculation

By means of mathematical calculations, the number of APE teachers in mainland China was estimated, and then comparing with the training speed across the country in the current mode, to try to evaluate and determine the problems currently existing in the training mode.

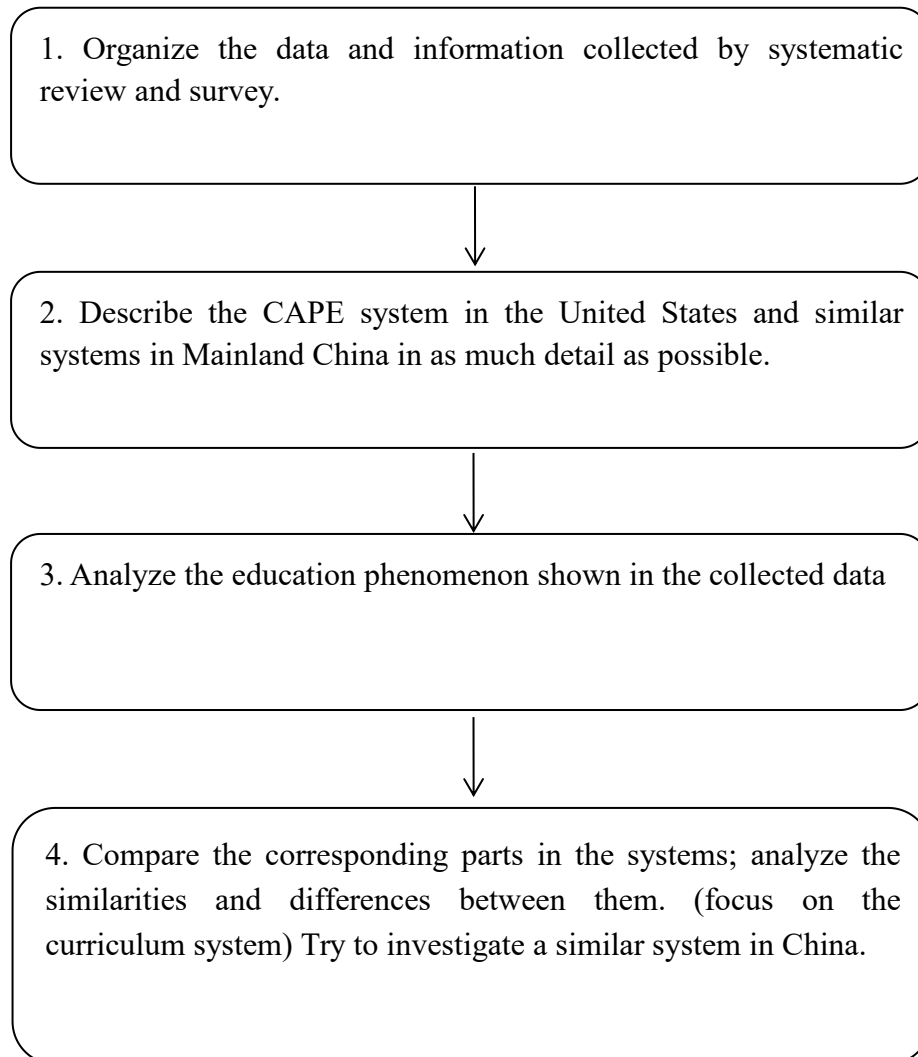
The formula adopted was: $N = (E/R) - H$. Where N is the figure to the full certified APE teachers that are required, and E refers to the figure of students that require APE service that is enrolled. R refers to the APE student instructor Ratio, and H is the number of certified APE instructors that are hired.

This formula has been referred to in the paper *The Prevalence-Based Need for Adapted Physical Education Teachers in the United States* by Prof. Zhang, and etc. In this article Prof. Zhang mentioned that the prevalence-based projection formula that was based on the approach proposed in the 18th Annual Report to Congress by USDE (1996), was based on the presumption that all undergraduates with Individualized Education Program recognized disabilities should get physical education services (i.e., zero reject and zero fail; Sherrill, 1998; USDE, 1996).

4.4 Comparative study

In this section, a four-stage comparative methodology (Bereday, 1966; Jones, 1973) will be used to conduct a comparative study about education systems related to special physical education in the United States and mainland China; the research methodology is divided into the following four steps:

Figure 1 Procedure of comparative study



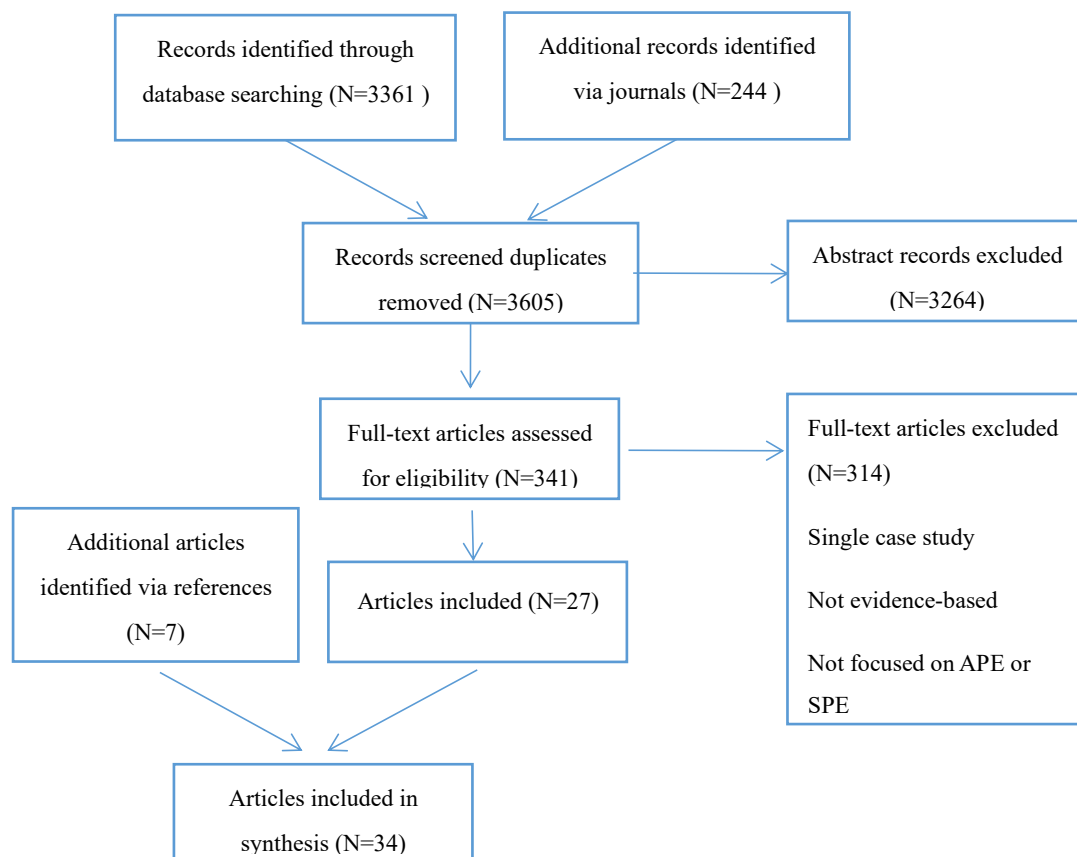
Chapter Four

Results

1. Examine the Development of Adapted Physical Education Certification Model in the United States and China by systematic review

The database search identified 3361 articles and a further 244 were sourced from journals. From the 3605 articles screened, 3264 articles were eliminated after title and abstract screening and a further 341 after examination of the full-text articles. The references of the remaining 27 articles were screened, resulting in the identification of an additional 7 frameworks. Finally, a total of 34 articles about APE system were included in the systematic analysis.

Figure 2 flow chart of article selection



Articles were synthesized into tabular format. The researches were classified into 3 groups: Adapted Physical Education (research including the USA and Mainland China; n = 21) Special Physical Education (mainly focus on China; n = 4), Integration Physical Education (subjects include teachers and students; n = 9). Key variations were seen between these 3 groups and divide them into four categories based on the type of research (descriptive, prescriptive, explanatory, and predictive). It can be seen that the research carried out on APE in the two countries is the largest in terms of research content. For the study of Special PE, only 4 were included, all from China. In terms of research type, 65% articles are descriptive, the number of explanatory and predictive classes is close, Prescriptive is the minimum at 18%. (Table 1)

Table 1 Type of research

Research content	Types of research			
	Descriptive	Prescriptive	Explanatory	Predictive
Adapted PE (N=21)	13(62%)	3(14%)	4(19%)	6(29%)
Special PE (N=4)	3(74%)	1(25%)	-	1(25%)
Integration PE (N=9)	6(67%)	2(22%)	4(44%)	2(22%)
Total (N=34)	22(65%)	6(18%)	8(24%)	9(26%)

Percentages are not accumulative because each article could be fit into multiple categories of type of research.

All included articles studied the three PE patterns in two countries from many aspects. (Including History, Environment, Development/innovation, Organization/model, Training/ certification and Problems.) The most common of these is the analysis of existing problems accounting for 82%, followed by the study on teacher training and certification, accounting for 79%. There are 65% of the studies on the three PE models of organizations, 53% of researches on development and innovation, relatively few studies on history and environment, accounting for 38% and 41%. (Table 2)

Table 2 Domains of research

Research content	Domains of research					
	History	Environm ent	Developm ent/innova	Organizati on/model	Training/ certificati	Problems

			tion		on	
Adapted PE (N=21)	5(24%)	5(24%)	9(39%)	18(78%)	16(70%)	16(70%)
Special PE (N=4)	2(50%)	4(100%)	2(50%)	1(25%)	2(50%)	4(100%)
Integration PE (N=9)	6(67%)	5(56%)	7(78%)	3(33%)	9(100%)	8(89%)
Total (N=34)	13(38%)	14(41%)	18(53%)	22(65%)	27(79%)	28(82%)

Undoubtedly, the vast majority of scholars believe that there are still some problems in physical education at present, however scholars historically and developmentally prefer to move toward Adapted Physical Education. Many scholars have realized that the key to the problem is teacher training, organization construction and qualification.

The above is the systematic review data synthesis, following will be narrated from the five specific aspects of the relevant research results.

1.1 Societal Awareness and the Need for Certified APE Teachers

In 1952 the United States officially used Adapted Physical Education as a substitute for Remedial Exercises (Winnick, 1986). One study (French etc., 1982) stated that the United States did not have truly professional special physical education teacher training before 1966, but then in 1967, the fifth paragraph of Public Law 90-170 was officially enacted to provide financial support for training special physical education teachers. Scholars consider this year to be the official starting point of modern special physical educator training.

Public Law 94-142 is the Education for All Handicapped Children Act which requires that physical education service by qualified personnel, particularly devised supposing required, be made available to all eligible pupils with disabilities (Education of the Handicapped Act, 1977). This law assumes that when it was enacted, states would create teacher certifications to ensure that physical education services would be provided by qualified human resources, but regrettably, 23 years after the law was enacted, endorsements or certifications have been established by simply 14 states for adapted physical education (APE) instructors (Kelly & Gansneder, 1998), most states

still do not have defined certifications for teachers of adapted physical education. eight territories and 36 states have not defined the qualifications instructors need to offer adapted physical education services to undergraduates with disabilities. The number of colleges and universities that were willing to bring APE teacher training programs into being has been limited by lack of support and state recognition, so APE training programs' initiation has relied on federal grants (Ellery& Stewart, 2000; Sherrill& DePauw, 1997).

The National Association for Sport and Physical Education (NASPE) and the American Association for Physical Activity and Recreation (AAPAR) recommends that pupils be considered eligible for adapted physical education services on condition that their comprehensive grade is 1.5 standard deviations under the mean on a norm-referenced test, or no less than two years under the age grade on criterion-referenced tests or other examinations of motor and physical fitness.

In the spring of 1991, the National Consortium for Physical Education and Recreation for Individuals with Disabilities (NCPERID), in conjunction with the National Association of State Directors of Special Education (NASDSE) and Special Olympics International, organized an "Action Seminar" on adapted physical education for directors of special education in the state and heads of advocacy groups for individuals with disabilities(APENS, 2008). The goals of this conference were to discover the blockades that prevented appropriate physical education services to persons with disabilities; and demonstrate an operation agenda for addressing and solving these issues. In response to these goals, it was suggested that the NCPERID formulate a means and professional criteria for assessing these standards.

Adapted Physical Education is an area with over a hundred years of history; it stemmed from efforts made in the 19th century to medically re-mediate disabilities. Since then the field of APE continues to grow rapidly and attract more and more people, so it is crucial for undergraduates requiring APE, to get the full benefit of the instruction to which they are entitled through the APE certificate system. The only practical means that parents and school districts can make sure that those pupils are receiving that benefit is to depend on a National level certifying authority to assert an updated standard, and on a regular basis certify that its members are prevailing in their apprehension and those skills and knowledge exercise (APENS, 2008). So the members of NCPERID developed the Adapted Physical Education National Standers whose mission is to promote the 15 APE standards and the national certification exam.

1.2 Adapted Physical Education National Standard

The Adapted Physical Education National Standards project's objective was to make sure that physical education for kids with disabilities are taught by a qualified Adapted Physical Educator. A set of 15 national standards was developed, in order to meet this purpose, to represent the contents a qualified Adapted Physical Educator should know to do their task, and a national certification examination was produced to evaluate the specialized contents. The contents an Adapted Physical Educator need to know were then placed and separated into 15 broad standards. (APENS, 2008)

These outcomes were re-examined by the Steering Committee and separated into 15 broad fields. The Steering Committee members were then assigned 2-3 of these areas, and responsible for describing the contents with their individual Criteria Committees. The 15 domains of specialized knowledge are shown below (Table 1).

Table 1 APENS Structure

<ol style="list-style-type: none"> 1. Human Development 2. Motor Behavior 3. Exercise Science 4. Measurement and Evaluation 5. History and Philosophy 6. Unique Attributes of Learners 7. Curriculum Theory & Development 8. Assessment 9. Instructional Design & Planning 10. Teaching 11. Consultation & Staff Development 12. Student and Program Evaluation 13. Continuing Education 14. Ethics 15. Communication <p>**http://www.apens.org/structure.html</p>	<p>The content in each standard area is divided into five levels, as shown below:</p> <p>Level 1: Standard Number and Name (e.g., 2. Motor Behavior)</p> <p>Level 2: The Standard's major components (e.g., Theories of Motor Development, Principles of Motor Learning, etc.)</p> <p>Level 3: Sub-components, dependent parts of knowledge of principles or facts was connected with the major component all regular educators should know(e.g., stages of learning, knowledge of types of feedback, etc.)</p> <p>Level 4: Adapted Physical Education content -- extra knowledge regarding the sub- components instructors that work with persons with disabilities must be familiar with (e.g., ordinary delays in development experienced by persons with severe visual impairments).</p> <p>Level 5: Application of adapted physical education knowledge from level 4 to instructing persons with disabilities (e.g., can identify and interpret delays in motor performance in children with disabilities)</p>	<p>1) The first three levels of each standard symbolize content that all physical educators should realized. These levels were produced by the Steering Committee and examined and validated through the Standards Committees.</p> <p>2) The level 4 content represents the additional content adapted physical educators need to know to fit the responsibilities and functions of their roles.</p> <p>3) Level 5 consists of example applications of the level 4 content that adapted physical educators must be capable to demonstrate.</p>
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1.3 Certification system of Adapted Physical Education in US

There are three categories of Persons who are eligible to become a CAPE in the US, the first is a recently graduated and qualified Physical Education Teacher; the second is professional Physical Educators with more than 10 years full time work experience; the last is persons teaching in Higher Education and Academic Programs. Each category has specific definitions and requires proof of certain qualifications.

2.3.1 Criteria for Eligibility

Applicants that apply for the national CAPE certification have to satisfy the following criteria that are demonstrated by APENS Board of Directors and be upheld by the APAC/AAPAR Highly Qualified Adapted Physical Education Teacher Position Paper.

There are three ways Adapted Physical Educators/Physical Educators, individuals in Higher Education and professional persons working with individuals with disabilities in physical activity/education can take CAPE certificate.

The first way is sit for the APENS exam; this would suit to recently graduated and qualified Physical Education Teachers. The examinations are taken hold of a rolling basis and can be taken at a lot of fixed positions in each state, and the applicants should fit the following minimum standards to be eligible to sit for the APENS examination:

- (a) Bachelor's degree with a major in Physical Education or equivalent (e.g., Kinesiology, Sport Science, etc.).
- (b) A minimum of 12 credits that specifically address the educational needs of individuals with disabilities, and 9 credits must be specific to the area of adapted physical education.
- (c) At least 200 hours of recorded experience offering physical education instruction to people with disabilities.
- (d) A current valid teaching certificate in physical education.

Course work's evidence must relate to students and physical activity with disabilities, as set out by state and/or national standards for professional arrangement in adapted physical education.

The Adapted Physical Activity Council (APAC) and the National Consortium for Physical Education and Recreation for Individuals with Disabilities (NCPERID) have the opinion that coursework in adapted physical education must provide evidence of ability and qualification in the following areas:

- a. Disability studies
- b. Motor assessment of individuals with disabilities
- c. Report writing
- d. Special education law
- e. Development of individualized education programs (IEP)
- f. Adaptations and modifications for physical education
- g. Behavior management
- h. Collaboration and consultation skills
- i. Advocacy skills
- j. Instructional design and planning
- k. Individual teaching and learning styles
- l. Inclusion practices
- m. Community and family resources
- n. Professional leadership
- o. Assistive technology for physical education

The aforementioned criteria shall be examined by the APENS standing committee members; their review will be forwarded to the APENS administrative office. They will report the findings in letter format to the applicant to decide eligibility to sit for the APENS examination.

The second one is to document their professional experience; experienced physical educators with more than 10 years full time experience would be suited by this method. A

Professional Physical Educator that applies under this option need to provide each of the following documentation or certification, but not need to join the examination:

- (1) Valid ordinary physical education teaching or/and coaching certificate.
- (2) At least of ten years full-time teaching experience in physical education with students with disabilities (this involves experience in integrated and/or segregated conditions).
- (3) Accrued 15 points in the following 5 categories across the past 7 years:
 - a) Board member of one state or elected official or national adapted physical education/sport organization for a minimum of one year (2 points each year for a maximum of 6 points).
 - b) Have supplied a presentation or in-service at a state or national grade that be relevant to adapted physical education (1 point each presentation for a maximum of 3 points).
 - c) Have taken and passed a 3 credit hour graduate level course in university or college successfully in adapted physical education (3 points per course for a maximum of 9 points).
 - d) Hold a valid adapted physical education state license or endorsement requiring the successful completion of a minimum of four semester credit courses in adapted physical education (3 points).
 - e) Supervised undergraduate teachers or interns in adapted physical education for a minimum of 200 hours (2 points).

The third one is document of institutional or higher education involvement ; this is suitable for Academics in Higher Education, Departments, and/or Organizations. There are two options:

Option #1:

Can provide each of the following documentation or appropriate verification:

Major in physical education, adapted physical education, special education or relevant territory in a doctoral program.

Has taught for a minimum of 2 years in public or private school condition or higher education in adapted physical education.

Minimum of 9 semester hours of supervising college/university undergraduates in practical, internships, and/or student teaching was connected with students' direct guidance with disabilities in physical education conditions.

Option #2:

Offer verification or documentation of tenure and significant adapted physical education teaching responsibilities since 1993.

States requiring APE Certification

- APE certification or endorsement
California, Florida, Louisiana, Maine, Michigan, Minnesota, Nebraska, Nevada,
North Dakota, Ohio, Oregon, Rhode Island, & Wyoming
- Dual Endorsement for PE and APE
Indiana
- Attempting to get APE certification
South Dakota and Texas
- Dropped APE certification
Arkansas and Kansas

To summarize, America established APENS in 1991, set up a certification system and then built a refined, effective, and practical APE certificate system over the next 20 years. Federal law guarantees the legal position and legitimacy of this APE system. The National Consortium for Physical Education and Recreation for Individuals with Disabilities (NCPERID) has made APENS to be the unified standard nationwide to ensure that teachers have the knowledge and skills needed to provide an excellent physical education to children with special needs.

1.4. Introduction of Special Physical Education Teacher training situation in Mainland China

In the United States, Britain, Canada, Germany, Australia and other developed countries, many universities and colleges have already set up the bachelor to doctor's degree in special physical education, even as a compulsory course for undergraduates. However, before 2001, no university or college set courses or degrees about special physical education. "Training specialized talents for the special physical education is a blank piece of Chinese higher education". (Jin. Etc, 2006) Tianjin sport university is the first school with a special education major in mainland China; it began to recruit students for special physical education at 2001.

According to Xie Tao's research into Tianjin sport university, Shandong sport university, the sport institute of Liaoning normal university, Xi'an sports university, and Guangzhou sport universities; the results showed that with every school admission of 30 to 50 people a year, Shandong sports university currently recruits the largest number of students, with about 300 students in four grades. If we assume that each year special physical education major students can graduate in those 5 schools, there should be 250 to 400 special physical education teachers, but there are 426000 students in China with special needs, so regardless of how many colleges and universities are training teachers or teachers of special education sports training, in reality the demand cannot be met.

Table 3 Special Physical Educator training situation in Mainland China

Name of major	School	Year of Enrollment		Degree
Special education	Tianjin sport university	2001	Department of Health and Sports Sciences	Bachelor
Special education	Shandong sport university	2004	Department of Special Education	Bachelor
Special education	Xi 'an sports university	2006	Department of physical education	Bachelor

Special education	Sport institute of Liaoning normal university	2006	Department of Special Education	Bachelor
Special education	Guangzhou special university	2008	Department of Sports and Health	Bachelor
Special Educational Needs MA	Beijing Sports University		Graduate school	Master
Special physical education theories and methods	Shanghai Sports University	2011	Graduate school	Master
Special Educational Needs MA	East China Normal University	2006	Graduate school	Doctor
Special Educational Needs MA	Beijing Normal University	2006	Graduate school	Doctor

The cultivation of special education teachers did not start until 2001 in China, and then it developed very slowly and only ever cultivated a few students. At present, the single source of teachers with SPE skills are undergraduate students from colleges, and the long cultivation period means that the demand for SPE teachers with special skills cannot be met. Some SPE schools hire part-time teachers or teachers with other professions but this leads to teachers with unsatisfactory skills and poor quality SPE courses. Meanwhile, the lack of training for working educators does not resolve these issues and it also prevents new teachers from learning new professional knowledge. As a result, under the current SPE teachers training mode China still faces the problem of insufficient teachers, teachers with unsatisfactory professional skills, and poor quality SPE courses.

2. Data analysis of questionnaire

Special physical education falls into the category of physical education, which means a physical educator, as the organizer and implementer of physical education, also organizes and promotes the healthy physical and mental development of students, spreads and develops scientific knowledge pertaining to physical exercise and scientific methods, builds student ideology and morality, and is also the discoverer and torchbearer of sporting talent. Their quality is therefore the key to giving full play to the role of school physical education in quality-oriented education. Since special physical education also falls into the category of special education, the physical educators must not only master the knowledge and structure of general physical education, they also need professional knowledge of special education. Special physical educators play a critical role in the success of students' physical and mental development and special education, which means understanding and improving their basic development is the prerequisite needed to promote the development of sport in special schools.

2.1 Teacher Resource & Teaching Situation

2.1.1 Number of Physical Educators, Full-time Teachers and Part-time Teachers

Table 3 Teacher resource

Type	Full-time Teacher	Part-time Teacher
Number (N=72)	25	47
Percentage	34%	65%

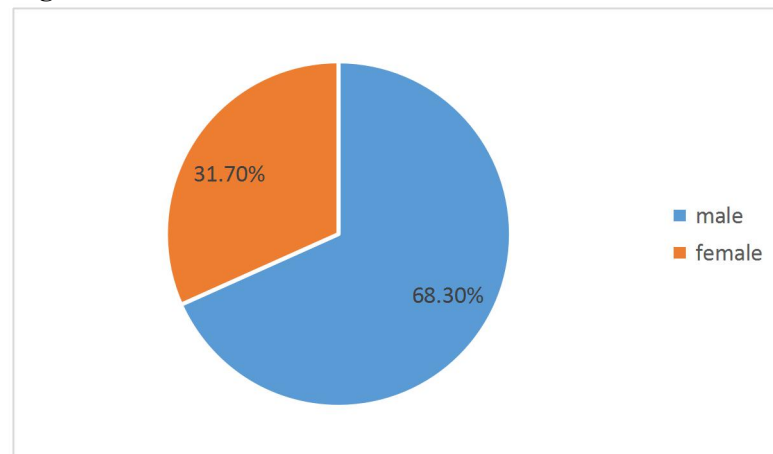
The respondents in this survey are from 19 special schools in 7 cities, including Guangzhou, Ji'nan and Zibo. There are approximately 4,000 students and 72 physical educators, including 25 full-time teachers and 47 part-time teachers, and the ratio of physical educator and student is 1:56. When asked "How many courses do you teach each semester?", 21 teachers (about 33.3%) say 3-4 courses, and 39 teachers (about 62%) choose 5-7 courses; when asked "How many courses do you think is the most suitable?" 83.3% believe 3-4 courses is enough, and only 16.7% chose 5-7 courses. This comparison shows that the workload of physical educators is much heavier than expected.

The above data indicates that physical educators in special schools have very demanding tasks, and there is a serious shortage of full-time physical educators. Moreover, table 3 shows that

the proportion between full-time teachers and part-time teachers is out of tune, with part-time teachers accounting for 62% of the total number of teachers, and full-time teachers only accounting for 38%, which doesn't conform to national requirements for teaching strength of special school, and provides further evidence of the lack of teachers at special schools.

2.1.2 Gender Distribution

Figure 3 Gender of SPE teachers



In accordance with School Physical Education Working Regulations, schools must have a certain number of female physical educators based on the number of the female students, but as Figure 2 shows, there are 68.3% male and only 31.7% female teachers, which is less than 1/3 of the total. An research revealed that some schools have no female physical educators, which will inevitably have an impact on physical teaching due to the particularity of special physical education and the influence of traditional Chinese concepts. Compared to males, fewer females would choose physical education and even less would choose special physical education.

2.1.3 Age & Year of Teaching

Table 4 Age distribution of SPE teachers

Age	Below 35	36-50	Over 50
Number (N=63)	24	37	2
Percentage	38%	59%	3%

The age structure refers to the percentage of teachers of various ages, which to a certain extent can reflect the scientific research ability, innovative and creative ability and the knowledge

and experience of teaching staff, as well as embodying the knowledge structure, work experience and capability of teachers. Different age structures lead to varied teaching effect; for instance, teachers under 35 are considered to be young, enthusiastic, energetic and passionate, but they lack experience, and they may also adopt unsuitable teaching methods which have a passive impact on their students. Teachers between 36 and 50 are the mainstay because they have many years of teaching experience and are familiar with various types of students and teaching methods. In special schools, physical educators within this range are always better at combining specialized theory with practice, and therefore they play a very important role in any teaching team. Teachers above 50 are senior teachers with declining physical strength, but who are rich in experience and who can train young physical educators. As the table shows, teachers between 36 and 50 account for 59% of special physical educators, and therefore they shoulder most of the teaching tasks. There are 38% of young teachers, which accounts for over 1/3 of the total, so the whole age structure is very reasonable.

Table 5 Teaching experience

Years of Teaching	1-5 years	6-10 years	11-15 years	16-20 years	Over 20 years
Number (N=63)	8	13	18	12	12
Percentage	12.6%	20.6%	28.6%	19.0%	19.0%

The number of years spent teaching reflect directly on a teacher's teaching experience directly, so by comparing the age structure (table 4) with the teaching experience (table 5), it can be concluded that the age of physical educators corresponds to their teaching age. Since teaching physical education in special schools is very practical work and the accumulation of experience has a very significant effect, the number of years working has direct influence on teacher's comprehension and mastery of teaching work, as well as their teaching quality in special schools. The table shows that 77.8% of physical educators in special schools have been teaching for 10-30 years, so they have rich teaching experience and are the main force of physical education teaching.

Only 16.7% of physical educators have 1-5 years of experience, which means that not many new physical educators have been recruited in recent years. There are no physical educators with 6-10 years of experience, which shows there is no real desire to develop physical educators for special schools; this means further motivational measures should be taken to introduce fresh blood.

2.1.4 Title, Degree & Major

Table 6 Degree of SPE teachers

Education	High School or Technical Secondary School	Junior College	Bachelor	Master	Others
Number (N=63)	0	21	37	5	0
Percentage	0%	33%	59%	8%	0%

(Here refers to the highest degree.)

Obtaining a degree means passing a series of standards and obtaining many certificates. To some extent, a person's educational background can represent their knowledge and ability, and in most cases the more complete a person's knowledge system is, the stronger their learning ability and adaptability will be. In accordance with Article 11 of the Teacher's Law of the People's Republic of China promulgated in 1993, it is necessary to have a corresponding degree before obtaining a teaching qualification, and as Table 6 shows, more than 67% of physical educators in special schools have bachelor's or master's degrees, and every teachers' highest degree is above high school or technical secondary school degrees, which conforms to the Teacher's Law of the People's Republic of China requirements for primary and secondary school teachers. While these teachers are basically competent at teaching in primary and secondary schools, there are no regulations targeted specifically at the standards of physical educators in special schools, so special schools are forced to implement the standards of ordinary schools.

Table 7 SPE teachers' title

Title	Primary	Intermediate	Senior	Super
Number (N=63)	8	25	30	0

Percentage	13%	40%	48%	0%
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A teachers' title is a symbol of their ability and level of academic research. The structure of the title refers to the ratio of teachers to primary, intermediate, senior and super titles, so it is generally related to degrees and years of teaching, but it is not completely equivalent; it is a standard to measure the overall quality of teachers. As Table 7 and 8 show, physical educators in special schools have a primary title, accounting for 13% of the total; 25 have an intermediate title, accounting for 40%; the senior title accounts for 48%, but no teacher has a super title. This phenomenon demonstrates a gradual improvement in the overall situation, but the lack of a super title reflects that while special physical educators can improve their own academic and teaching level with an increase in age and experience when there is a stable improvement of the title structure of physical educators in special schools, it is still difficult to reach the highest academic levels and teaching ability as others, so further effort is required.

Table 8 Major of SPE teachers

Major	Physical Education	Special Education	Special Physical Education	Others
Number	33	24	0	6
Percentage	52%	38%	0%	10%

Special physical education is quite a new thing in colleges, which is why part-time teachers account for a large proportion of them.

Due to the particularity of students, physical educators in special schools must master basic knowledge, theory, and the practical method of teaching physical education, as well as having basic theoretical knowledge of special education, and the skills needed to communicate with special students in sign language and the Braille alphabet. The research (see table 8) shows that 52% of physical educators in special schools are sports majors, 38% are special education majors, and 10% major are in other disciplines such as educology, clinical medicine, and rehabilitation and others; this indicates that most physical educators in special schools have mastered physical education knowledge, but 62% of them have received no long-term systematic training of special education, and 48% of them have no long-term and systematic study experience of physical

education. Moreover, among the research participants, no one is graduating with a major in special physical education.

There are two reasons for this phenomenon: 1. Special physical education is quite a new thing in China and is in its initial stages so there are not many graduates to participate in the work due to current deficiencies in training. 2. Special schools hire many part-time physical educators due to having limited resource. This means that many physical educators in special schools might lack the relevant theoretical knowledge, and teach students based on their experience and intuition. This is in complete opposition to the requirements for physical educators in special schools, and indicates that the professional level of physical educators must be improved.

2.2 Teaching Condition

2.2.1 Teaching Material & Syllabus

The curriculum refers to all the disciplines that are to be learnt, including the progress and arrangement. There are three types of curriculum in Chinese elementary schools: the teaching plan, the teaching syllabus, and textbooks. The teaching plan is the overall planning of the curriculum, while the teaching syllabus and textbook are the concrete forms that involve setting the curriculum, distributing the teaching hours, planning the academic year, and other specific contents.

As an important criterion for measuring the quality of teaching, the physical education syllabus has unified national requirements on teaching and a scientific guidance document in the form of an outline, as well as the direct basis of textbook compilation and teaching activity, all of which has an immediate influence on the quality of students. Textbooks are compiled based on a syllabus, so they are teaching materials for teachers and material which students use to learn knowledge in a systematic way. The Nine-Year Compulsory Full-Time Elementary School Physical Education and Health Teaching Outline was promulgated by the Ministry of Education in December 2000, and was formally implemented on September 1, 2001 to replace the Nine-Year Compulsory Education Physical Education Teaching Outline developed and promulgated in 1992. It is a transitional syllabus of Physical Education and Health Curriculum Standard which was promulgated in the same year. This means the new curriculum standard has replaced the former syllabus and is now the new national guidance document for physical education teaching. With

health-orientation being its guiding ideology, it focuses on promoting the overall development of students and can be used in special schools where it provides new teaching concepts and ideas for special physical education teaching, while enabling disabled student to have health-oriented physical education lessons that will promote their comprehensive development.

Table 9 Situation of holding syllabus

Holding Syllabus	of	Both	Neither	Teaching Material	Syllabus
Number (N=63)		14	0	27	22
Percentage		22%	0%	43%	35%

According to the definition of a teaching syllabus and teaching material (textbook) in pedagogy, this is a necessary condition for any discipline. As table -10 shows, only 22% of special physical educators have a syllabus and teaching material, 78% have either one of them, while 43% teach without a physical education syllabus or plans, showing that the implementation of new curriculum standard is not satisfactory in special school physical education. Many special schools still use a previous syllabus, while 35% teachers have no teaching material. During the survey, many physical educators expressed their helplessness at the lack of specialized equipment for special schools. With no important basis of teaching, some teachers are forced to teach based on their experience and intuition, which affects the science and integrity of physical education knowledge, and leads to varied levels of physical education teaching level due to differences between teachers. This indicates that a unified implementation requirement and standard is needed to compile a teaching syllabus and material for special schools; failure to do so will have direct effect on physical education teaching and lead to failure in reaching the objectives and requirements of special physical teaching, while reducing the overall teaching quality and operating level of special schools.

Table 10 Type of teaching material

Type of teaching material	Number (N=27)	Percentage
Normal teaching material	7	26%
Adjustment made to normal teaching material	18	67%
Teaching material specified for disabled students	2	7%

Table 11 Nature of teaching material

Nature of teaching material	Number (N=27)	percentage
National unified ones	22	82%
Provincial unified ones	3	11%
School (teacher) self-designed ones	2	7%

After gaining a general understanding of the syllabus and teaching material, the author then surveyed different types of teaching materials. The type and content of physical education material determine its pertinence, application, scope, and object. In general, elementary school students have corresponding textbooks, while vocational schools have specialized textbook which are compiled based on the learning ability and thinking level of different types of students and different grades. On this basis, disabled students should have specialized learning materials, and teachers should have specific teaching materials, but as Table 2 shows, only 2 physical educators from special schools use teaching materials that are pertinent for disabled students (they are from the same school which compiles teaching materials for themselves), 26% of them choose to use material for normal students of the same grade, and 67% make some adjustment to normal material. This data reflects the urgent need for material to teach physical education to disabled students, and it also reflects that physical education teaching in special schools is not pertinent, so teaching on the basis of student characteristics is difficult, and so too is ensuring the end results.

Under these circumstances, achieving teaching tasks and teaching objectives smoothly is difficult, with the inevitable result that the overall level of education in special schools is low.

Moreover, the second table also illustrates a lack of pertinence in physical education teaching material. As to the level and type of teaching material, 82% of teachers use the national unified textbook because it is authoritative, scientific, and extensive, but since there is an enormous difference within each region, the provincial (regional) education sectors should make appropriate adjustments when using the national textbook so they are region specific, and special materials should be compiled for disabled students to achieve the best educational results.

2.2.2 Curriculum Implementation

Table 12 Curriculum time in one week

Curriculum Time	0 credit hour	1 credit hour	2 credit hours	3 credit hours	More than 3 credit hours
Number (N=63)	0	3	40	20	0
Percentage	0%	5%	63%	32%	0%

According to the new curriculum standard, grade 1-2 students should have 4 physical education and health lessons (physical education practice and theory lesson included) each week, 3 lessons for grade 3-9 students, and 2 lessons for high school students. The Table shows that most special schools arrange 2 physical education lessons each week, 5% of schools have 1 lesson, and no school arranges more than 3 lessons in a week. This data shows that the special schools surveyed arrange less physical education lessons than specified by the state so they need to set up more physical education lessons.

Table 13 Situation of P.E. class implementation

Implementation	Fully implemented	Sometimes replaced by others	Often replaced by others	Cannot implemented
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Number (N=63)	47	13	3	0
Percentage	75%	21%	5%	0%

A physical education course has an immediate effect on students' physical exercise and rehabilitation, as well as achieving the overall level and final goal of physical education teaching in special schools. The Table shows that 75% of physical educators can implement physical education teaching completely, 3 teachers believe a physical education class is often replaced by other lessons, while 21% believe their physical education class is sometimes replaced by others, showing that in special schools, a physical education class can be basically guaranteed but it may occasionally be replaced by other courses. Special schools attach great significance to physical education because physical exercise benefits the physical and mental development of students.

2.2.3 Grade Evaluation

Table 14 Grade evaluation

Evaluation method	Remark	Rating	Remark and rating	Hundred-mark system	Other
Number (N=63)	0	35	23	5	0
Percentage	0%	56%	37%	8%	0%

Evaluating teaching refers to the measurement, analysis, and assessment of teaching quality, and with the current development of quality education, student' performance has become more significant. Therefore, an evaluation of physical education should consider overall development as the core by focusing on the comprehensive development of students and trying to improve their quality of life through sporting activities. In accordance with Article 31 of the Interim Regulations for Special Schools, special schools should evaluate the quality of education and teaching under the guidance of curriculum plans and syllabus, but attach great significance to evaluating the teaching process. Schools are not allowed to evaluate education, teaching quality, and teachers' work, based only on the academic performance of students.

Academic assessment and the grading of physical education and health means estimating and grading students' academic performance and judging whether or not they are meeting their learning objectives. The new curriculum standard indicates that the assessment methods must be based on the characteristics of students of different ages and grades. It has been suggested that grades 1-2 should adopt the remarks system, while grades 3-9 and high school should adopt a rating system, or combine the rating system with the remarks system (in accordance with Physical Education and Health Curriculum Standard of Primary and Secondary School, September 2001). All this indicates that assessing the performance of physical education should not be based on scores. The marks out of a hundred system has many shortcomings and cannot capture students' enthusiasm and studying initiative. This new curriculum standard cancels the old system and replaces it with a four-level assessment: excellent, good, pass and fail; this makes it easier for teachers to assess students' progress, and enabling them to consider more elements when assessing their performance, and will result in a more scientific evaluation of the mental and physical development of students.

As the table show, 93% of special physical educators have adopted the scientific rating method or a combination of ratings and remark, and only 8% still use the hundred-mark system, indicating that the assessment method used in special schools has basically reached the new curriculum standards, and now complies with the relevant national regulations that advocate a quality education.

2.3 Attitude to a Qualification Certificate

A physical educator is the director, supervisor, and implementer of physical education, so their attitude towards work difficulties has direct influence on their teaching. Similarly, their comprehension of work difficulties and their attitude towards problem solving will determine whether they can fulfill their work and provide high-quality special physical education teaching. Having a correct attitude towards their personal capabilities and qualifications, and is of benefit to a feasibility analysis of the adaptive qualifications of a physical educator.

2.3.1 Difficulties in Teaching

Table 15 SPE teachers' difficulties in teaching

Type of difficulty	Number	rank
Shortage of teaching and research funding	18	6
Shortage of promotion opportunity	40	1
Heavy workload	22	4
Lack of work guidance	9	8
Limited personal capability	27	3
Lack of teaching and research support services	20	5
Lack of further education opportunities	31	2
Unreasonable assessment mechanism	11	7
Other	3	9

In accordance with Article 35 of Regulation on Education of the Disabled of the People's Republic of China, governments at all levels should attach great importance to cultivating and training teachers for the disabled, take measures to gradually improve their status and salary, improve their working conditions and environment, and encourage them to engage in the life time education for the disabled. However, in actual teaching and research work, special physical educators still face many difficulties; the table shows 40 of the 63 respondents chose "Shortage of promotion opportunity", and 31 and 27 teachers chose "Lack of further education opportunities" and "Limited personal capability" respectively, followed by "Heavy workload" and "Lack of teaching and research support services". The last four options are, "Shortage of teaching and research funding", "Unreasonable assessment mechanism", "Lack of work guidance" and "Others".

In combination with previous surveys, the author believes the reasons for the above remarks are as follows: (1) Teachers salary is connected with their professional titles, so that want promotion, but promotion is due to the results of teaching and research (the dominant factor), attitude to work, and feedback from students and parents, etc. The salary of special physical

educators is made by reference to physical educators at normal schools, but many special physical educators are not satisfied even though they are given a special education allowance by the nation due to the complexity of the work. (2) Special physical educators suffer from a heavy workload and a heavy burden, so they find it difficult to complete teaching and research work simultaneously. With the implementation of a new curriculum standard, the nation and schools put forward higher requirements for physical educators, and many teachers feel they cannot cope with the work with their current capabilities. However, there is no long-term comprehensive training organization for physical educators in special schools, and only a few schools or majors provide relevant training. Many special physical educators want to participate in professional training, but they cannot. (3) There are many school-age children with special education demands in China, and while the laws and government regulations protect the right of disabled school-age children to receive education, the relevant work is carried out inadequately, and government funds and resource are not enough to meet the demand, which leads us back to the lack of teaching and research facilities. Meanwhile, the study on special physical education is in its initial stage in China, and professional researchers are needed to guide the work of special Physical educators.

2.3.2 Professional Training

Table 16 Times of professional training

Times of training	0	Once	Twice	3-5 times	Over 5 times
Number (N=63)	0	4	7	17	35
Percentage	0%	6%	11%	27%	56%

Table 17 Training form of teachers

Training form	Number	Percentage
Discussion and exchange (School-based training)	63	100%
Short-term training (1-2 weeks)	25	40%
Long-term training (1-2 months)	2	3%

Train by correspondence	1	2%
Others	7	11%

In accordance with the Opinion on Further Promoting Reform and Development of Special Education during 11th Five-Year Plan, special schools should encourage teachers to carry out teaching and scientific research by combining this with practice to improve their teaching level. In accordance with Interim Regulations for Special Schools, special schools must strengthen the ideological, political, and professional ethics education of teachers, attach great importance to their training and continuing education, develop further learning plans, and create conditions for teachers and other staff to receive further education and training.

The first table shows that while every teacher has participated in professional knowledge and skill training at least once, and 56% of them participated at least 5 times. The distribution reflects a rising trend in the number of training participants, it also showed that all the schools interviewed have organized professional training, and the longer they are at work, the more training they attend.

As to the type of training, the second table shows that every teacher has participated in discussion and exchange (school-based training), 40% have attended a short-term training class, and only 2 and 1 teachers used to attend long-term training and training by correspondence for over a month respectively, which is even less than the number of teachers who attend backbone teacher training class and other trans-disciplinary training.

This data shows that every teacher has participated in professional training, but most of them join school-based training and short-term training classes, very few attend long-term systematic training due to time restrictions and limited resources, or they cannot leave school to attend training for a long time. Moreover, the lack of systematic training for relevant majors in China makes it impossible to provide enough training channels for physical educators.

2.3.3 Willingness to participate in training and certification

Table 18 Teachers' attitude about training

Attitude	Number (N=63)	Percentage
Yes	33	52%
No	5	8%
Training, but no exam	25	40%

When asked “Would you like to attend if an organization provides unified training and exam, and issues professional certificate for those who pass the exam?”, 92% of teachers want to participate, 40% want to participate in training, but not the exam, and only 8% don't want to attend training or certification.

A teacher who does not want to attend training explains they do not like the present work, and wants to take another job if possible, so they have no interest in certification. Those who like training but not the exam, say they are worried that their current work will be affected if they study for the exam or fail.

Table 19 Training content

Training content	Number (N=63)	Percentage
Professional elementary training	9	14%
Professional skill training	37	59%
Vocational education courses	5	8%
Rehabilitation training course	12	19%

When asked “What do you want to learn the most in training?”, 59% chose professional skills, showing that most teachers feel dissatisfied with their professional skills, and hope to improve them through professional training so they can cope with daily work.

3. Researching the degree of demand for APE teachers in Mainland China

The purpose here was to roughly estimate how many APE teachers are needed in Mainland China by way of calculation, compare the results with the current speed of training APE teachers, and then evaluate the training mode of APE teachers.

Both the prevalence-based model and the market-based model could be used to estimate number of APE teachers needed; while special education is a common area the two models are generally adopted in(USDE, 1989). Funded positions drives the market-based model as a key driving force(Boe, 1990) ,and the required number of special education teachers is defined as the gap between quantity of certified teachers employed and the number of funded positions. The weakness of the market-based model is that it will be confounded by funding, i.e., needed number of special educators estimated by this model is determined by quantity of funded positions. In other word, positions of special educators decreases along with decreased funding, without regard to the educational needs (Sattler & Sattler, 1985; USDE, 1989).

The market-based model may reduce or restrain the figure of APE teachers needed according to the real population of students requiring APE service (Zhang, 2000). For example, in the state of Michigan, 82 APE teachers (USDE, 1998) give lessons to 106,779 students who has the need of APE services. This estimated number is calculated assuming 4% of the student population have special needs and require adapted physical education be included into their individual education programs (Kelly & Gansneder, 1998). By calculation, each APE teacher serves 1,302 students with special needs. It also show that the total number of APE teachers in Michigan is far from sufficient to the need of special students who is in need of APE services.

The prevalence-based model is mainly determined by figure of students that require special education. As a result, number of funded positions is not the key driving factor of the model. (Sattler & Sattler, 1985; USDE, 1989). In this mode the needed quantity of special educators is protruded by dividing the figure of students requiring special education by the student-teacher proportion in special education and then deducting the figure to the full certified special educators that were employed (Boe, 1990; Parshall, 1993). The prevalence-based model assumes that all

students with disabilities should have the chance to be provided with free and appropriate special education (Horvat & Kalakian, 1996; Sherrill, 1998; USDE, 1996).

The prevalence-based model is widely used to estimate the necessity for special educators in New York, Kansas and other states (National Association, 1994). The 18th Annual Report to Congress by USDE (1996, pp. 20-21) depicts this model that the necessity is estimated with three variables: (a) number of students that needs special education, (b) the proportion of students and teachers in special education area, and (c) quantity of employed special educators (Zhang, 2000).

3.1 Investigate the number of students with the need for APE service

The data used in this study came from the “2013 Education Statistics of China”; it is a collection of many related data of Mainland China that was released by the Chinese ministry of education in 2014. This report is the most reliable source for special education data in Mainland China.

The number of fully certified APE teachers each state needs (N) was calculated in the formula $N = (E / R) - H$ formula.

The figure of students that required APE service was entered (E) was approximated for the figure of children from 6-18 years old by 4%. The number of children aged 6-12 is 94848050; 12-15 is 44883526; and 16-18 is 43699228. 4% was a median of the 3-5% of the American students’ body requiring APE service reported by Kelly and Gansneder (1998). Because the date source did not give the percentage of Chinese students who needed APE service, this study used the American data.

$$(94848050 + 44883526 + 43699228) * 0.04 = 7337232$$

7337232 is the number of E in the formula (Number of children in need of APE services);

3.2 Investigate the ideal number of teachers who can offer the APE service

The ratio(R) of APE students and teachers in each state of America is estimated at 104:1; the mean number of APE students and APE teacher was ascertained by Gansneder and Kelly(1998). The variable of R stands for the mean APE student-teacher ratio of all American states. Using this

figure was because no other ratio data of all the 50 states was available, and it provided the criterion to measure state-to-state comparisons of the need for APE teachers.

The variable of H should be the number of hired APE teachers in Mainland China but in this study, teachers were used instead of special school teachers because there are no statistics for the number of hired APE teachers in Mainland China and most students with APE service must study in regular schools (68.2% in 2010). But regular schools do not usually consider teachers' qualification and abilities in APE because there is no APE certificate system in Mainland China.

104 is used as R in the formula (APE teacher-student ratio);

$7337232 / 104 = 70550$ (Total number of APE teachers estimated);

45653 is used as H in the formula (Number of all special schools' teachers hired,);

$70550 - 45653 = 24891$ (Number of APE teachers needed,);

24891 is N in the formula. It is the number of APE teachers be needed.

4. Compare the adapted physical educators' training and qualifying mode

4.1 Training Objectives

The objective of talent training is the decisive factor needed to restrict the content of a curriculum, so adjusting and developing the structure of a curriculum structure is both an important principle and the theoretical basis on which a nation can develop a curriculum standard. Different school properties and objectives will lead to varied talent structures, so the training objectives of special physical educators is restricted by the development of the national economy, and the culture, society, education, legal system, etc., which in turn is affected by national educational goals, objectives and levels, as constrained by the development of productivity and production relations which are influenced by the development of science and technology and are closely related to the social status of the disabled. This part will analyze and compare special educator training objectives in China and the USA.

4.1.1 Special Physical Educator Training Objectives in the USA

The training objective is an important principle and the theoretical basis on which a nation can develop a curriculum standard. “The objective of special physical educator training in the USA is to cultivate special physical educators for schools.” This overall objective is influenced by the dual demands of special teacher training and physical educator training and therefore, the US special physical educator training plan specifies that special physical educators should be familiar with the philosophy, regulations and history of special education; understand the characteristics of disabled students and the pathogeny of various types of disability; be able to diagnose and assess students; use various teaching methods and design the content of creative teaching; design and control the teaching environment; manage student behavior and social adaptability; get along well students and establish partnership and cooperative relationships; have good moral traits and professional qualities. (Jansma P., Surburg P., 1995)

4.1.2 Special Physical Educator Training Objectives in China

China had no training for special physical educator until recent years, and currently there is no national unified training standard on special physical educator. The sports departments of universities develop a standard on this major by themselves, and different universities have different training objectives owing to various requirements and rules. Here, the author introduces the special physical educator training objectives in China through the following universities.

Table 20 Special Physical Educator Training Objectives

School	Training Objective
Tianjin University of Sport	The physical educator is to be engaged in all round physical education teaching, training, competition, scientific research and management in schools and other kinds of sporting talents. They should have a solid professional foundation, embrace modern educational concepts, have good scientific literacy, professional ethics, a creative spirit, and practical ability.
Shandong Sport University	Advanced talents with relevant knowledge and skills on general and special physical education teaching, training, completion, organization and management, and the rehabilitation of the disabled. They should be able to

		organize and guide the disabled to do physical exercises and functional rehabilitation in special education institutions, civil affairs departments, rehabilitation institutions, communities and other departments, and should be competent at teaching and training the disabled, and be able to organize and manage disabled sports competitions.
Guangzhou University	Sport	Cultivate those who can engage in special physical education teaching, sports training, competition, and rehabilitation training in special schools, disability rehabilitation institutions, community-based rehabilitation centers, charity houses, sporting organizations for the disabled, schools, and other departments. They should be able to organize and instruct the disabled to do physical exercise and rehabilitation.
Xi'an Education University	Physical	Train all-around developed talents who can be engaged in educational practice, theory research and administrative management in special education institutions.
Liaoning University	Normal	Train all-around developed talents who can work as teachers in special schools, as trainers of Paralympics Games, as researchers of special physical education work, as social workers of special sports, and as management personnel of relevant department.

In China, the training objectives of special physical educators varies with schools, but there are also some common practices such as training professional talents on special physical education teaching, training, competition, organization and management, and cultivating talents for the Paralympics.

4.1.3 Compare Special Physical Educator Training Objectives in China and the USA

Table 21 Comparison of educator training objectives

USA	China
All kinds of abilities	Employment-oriented

Special physical educators	Special physical education teaching, training, competition, research and management personnel
One or more capabilities for each objective	Poor operability
The ability to communicate and exchange with others, professional moral ethics, comprehensive abilities	Fail to cultivate capabilities beyond those required by the major.

In general, the objective of special physical educator training in the USA is to cultivate special physical educators for schools, so it focuses on cultivating all kinds of capabilities when developing talent training objectives. According to the US Special Physical Education Talent Training Standard, 15 capabilities are required, and schools can arrange the class content and teaching form based on the 15 indexes listed. China focuses on physical exercise and training the disabled, but the objective is employment-oriented. However, it features poor operability with no specific explanation of the capabilities needed, and there is no real demand on student capabilities such as communication, and care for the disabled and professional ethics, etc.

The objective of special physical educator training the USA is mainly reflected by: 1. Cultivating a comprehensive basic theoretical knowledge based on special education and practical ability; 2.enhancing professional ethics. The objective is achieved by enriching student knowledge and expanding abilities through basic courses, specialized courses, and professional elective courses, in order to lay a solid foundation for any subsequent study of professional knowledge on special physical education. Professional knowledge of special physical education focuses on the assessment, diagnosis and evaluation of disabled students, the creative design and arrangement of teaching based on student circumstances, and solutions to possible difficulties on flexible teaching processes. According to sports universities which set up special physical education majors, the talent training objectives are generally the same, and put forward general requirements on the quality and specification of talent that must be cultivated. The specific goal is to cultivate compound talents who are equipped with the knowledge and skills required by special physical teaching, training, competition, management, rehabilitation and research, and to provide

applied professional talents to China's special schools, primary and secondary schools, rehabilitation centres, and communities, and special sports institutions, etc.

4.2 Form & School System

4.2.1 Cultivating a US Special Physical Educator

In advanced education in the US, the training forms of special physical educators are:

- a. Four year full-time undergraduate APE professional training
- b. Minor of four-year physical major
- c. APE related selective courses in PE undergraduate courses.

Table 22 Cultivation form in the USA

School	Training form
Texas Woman's University	<ol style="list-style-type: none"> 1. Four-year professional training of special physical educator 2. Set up special physical education courses for junior and senior students who major in physical education
Ohio State University	Set up special physical education courses for sports majors, and regulate so they will obtain a certificate of physical teaching for children from kindergarten to 12 years old in order to obtain special physical education qualification.
University of Wisconsin Oshkosh Campus	Minor of sports major, 26 credit hours
Eastern Oregon University	Set up special physical education courses for all sports majors.

4.2.2 Cultivation Form of China's Special Physical Educator

According to the statistics, there are 69 universities in China setting up a major in special education, but not many have set up a major in special physical education.

Table 23 Cultivation form of China

Major	School	Year	College (department)	Degree
Special Education	Tianjin University of Sport	2001	Health and Sport Sciences Department	Four-year undergraduate
Special Education	Shandong Sport University	2004	Sports Social Science Department	Four-year undergraduate
Special Education	Xi'an Physical Education University	2006	Department of Physical Education	Four-year undergraduate
Special Education	School of Physical Education, Liaoning Normal University	2006	Department of Special Education	Four-year undergraduate
Special Education	Guangzhou Sport University	2008	Department of Sports and Health	Four-year undergraduate

Feature: single form, long period, and narrow range of cultivation.

4.2.3 Comparison of Special Physical Educator Training Form in China & the USA

In the US, the states set up a training form and educational system for special physical educator based on their own autonomous systems. For example, The Ohio State University sets up special physical education course for all sports majors, and requires them to obtain physical education certificate before issuing special physical education certificates. Eastern Oregon University requires all sports majors to learn special physical educator training, and adopts a 4-year professional training system and “3+1” model (i.e. 3 years physical education training and 1 year special physical education training). These forms and educational systems are flexible and

can be adapted to meet the actual demands quite well. In China, the major task of training special physical educators is undertaken by a handful of undergraduate universities, which adopt a 4-year education system, and two training forms: 1. Set up a special physical education major. 2. Train special physical educators on the basis of a physical education major. In comparison, China's training form is single and should be diversified to broaden the training channels.

4.3 Curriculum

4.3.1 Curriculum of US Special Physical Educator Training

After studying and analyzing the special physical education curriculum of several US universities, the author found that some have stopped training undergraduate special physical education majors and replaced it by setting up adaptive physical education training courses for all sports majors. By combining the knowledge structure of adaptive physical education, the author divides special physical education courses into several major parts: a normal course, a professional course, and a practical course.

A normal course can be divided into a public elementary course and a sports elementary course, both of which are elementary courses for special physical education training, as well as teaching the basic knowledge that a qualified physical educator should have, just like other physical educators. Normal courses are elementary physical education courses that include pedagogy, introduction to sport, and psychology, etc., where the goal is to teach future special physical educators various kinds of knowledge, skills, and experiences. Some US universities no longer set up a special physical education major, they have replaced it with a physical education training certification course for all sports majors but future special physical educators should also attend normal courses.

Professional courses mainly refer to courses in the field of special physical education, including behavior management methods, the theory of special physical education, an overview of adaptive water activities, inclusive education in physical education practice, and the action and body assessment of children with special needs, etc.

This practical course is designed to familiarize future teachers with the actual situation of disabled people, and also enhance their comprehension of knowledge, and then put what they learn into practice.

Chen Dan (2007) concludes the curriculum of US special physical education course by taking four universities as an example.

Table 24 Curriculum of USA special physical education (Chen, 2007)

		Texas Woman's University	The Ohio State University	University of Wisconsin	Eastern Oregon University
1	Adaptive physical education teaching method	●	●	●	●
2	Inclusive education in physical education teaching practice	●	●	●	●
3	Action and body assessment of children with special needs	●	●	●	●
4	Practical courses	●	●	●	●
5	Physical growth and movement development		●	●	
6	An introduction to physical education of the disabled	●	●		
7	Adaptive exercise in water	●		●	
8	Behavior management methods	●			
9	An introduction to the disabled	●			
10	An introduction to the features of students	●			

	with learning and behavioral disabilities	
11	An introduction to the features of students with mental retardation	●
12	Assessment method of students with learning and behavior difficulties	●
13	Education course for severely disabled students	●
14	Preceding study on adaptive physical activities	●
15	Interest cultivation in special education course	●
16	History and law of adaptive physical activities	●

As the special Physical educator training course of the USA (table 24) shows, they have the following common places:

1. A combination of theory and practice. For example, all four schools set courses called “Inclusive education in physical education teaching practice” and “Practical courses”. Some of the schools still have specific request for internship time.
2. The training plan is universal and pertinent at the same time, so teachers will have common knowledge and professional knowledge. This will give graduates the ability to meet the diversified needs of students.

4.3.2 Curriculum of Chinese Special Physical Educator Training

This paper describes the curriculum of Chinese special physical educator training through the following five universities.

Table 25 Curriculum of Chinese Special Physical Education

University		Main courses
Tianjin University of Sport		Theory of physical education and sports, physical education in school, method of sports science research, pedagogy, psychology of physical education, sports anatomy, sports physiology, sports injury, prevention and cure, hygiene of children and teenagers, design of physical education course-ware, track and field, gymnastics, martial arts, swimming, basketball, volleyball, football, calisthenics, tennis, table tennis, badminton, etc
Shandong University	Sport	Introduction to special education, psychology and education of the disabled, sports for the disabled, sports physiology, physiology and pathology of disabled children, rehabilitation medicine, sports medicine, sports rehabilitation, the Paralympics, sign language, sports psychology, sports anatomy, track and field, basketball, swimming, gymnastics, etc.
Guangzhou University	Sport	Sports anatomy, sports physiology, sports biochemistry, sports bio-mechanics, sports health care, introduction to special education, pedagogy, educational psychology, rehabilitation medicine, sports rehabilitation, psychology of the disabled, theory of physical and sports for the disabled, track and field for the disabled, ball games for the disabled, swimming for the disabled, Chinese sign language, Braille.
Xi'an University of Education	Physical Education	Special pedagogy, pathology of special children, psychology and education of children with hearing impairment, psychology and education of children with visual impairment, psychology and education of children with mental retardation, diagnosis and assessment of special children's education, preliminary inclusive education for special children, disabled athlete medical classification theory and method, Chinese sign language, Braille, disabled sports events and regulations, swimming, track and field, game teaching for

disabled children, etc.

Liaoning University	Normal	Introduction to sports, introduction to special education, physical education in school, applied psychology, method of sports science research, pedagogy, sports for the disabled, overview of special education, psychology of disabled children, sports anatomy, track and field, gymnastics, basketball, swimming, volleyball, football, badminton, table tennis, tennis, etc.
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All universities attach great significance to the cultivation of general sports skills, which conforms to the requirements of professional sports training. Besides, physical education related courses for the disabled are set up to highlight the features of special physical education, but the focus is on competitive sports or sports rehabilitation with no direct involvement of adaptive physical education, which is generally replaced by school physical education. For special physical education, close attention should be paid to the mastery of professional practical skills, and a large amount of practice and internship should be arranged during the 4 years, - this should have been a key consideration in the current curriculum of these universities.

4.3.3 Comparison between China and the USA

When setting a curriculum the combination between theory and practice is close. A curriculum includes three core parts: a normal course, a professional course, and a practical course. A normal course involves a wide range of professional knowledge about special physical education, including both social science and natural science, while physical education and sports, such as sports physiology, sports health care, sports training, sports psychology, etc., account for a large proportion. Professional courses include the general theory of the disabled and professional physical education theory of the disabled; the latter includes an overview of the physical education of the disabled, special physical education teaching method, special children's sports evaluation, history and law of special physical education, etc. The practical course is also an important part of US special physical education course. The Practicum Experience Provided is a course set up specifically to cultivate students' practical ability; it enables students to master special knowledge

related to physical education while studying and practicing, and by putting theory into practice, and then summing up the experience in practice.

The curriculum is core to the construction of a major, and the key which determines the quality of personnel training. Special physical education belongs to inter-discipline, and setting professional courses requires a lot of integration. Special physical education courses currently integrated in China's sports universities are inadequate because the curriculum is mainly pedagogy, physical education, and rehabilitative medicine. The core status of "special physical education" should be highlighted to cultivate special physical educators for society. When setting a curriculum, the shortcomings of teachers' professional qualities and special physical education equipment should be overcome, and the proportion of disabled physical education courses should be increased in order to design a more reasonable special physical education course system.

4.4 Brief summary of comparative study

After researching the certification system of the American adapted physical activity and comparing the system of special physical education teachers between China and America, we found large gaps between them in the present development of special physical activity education. There are many problems in special physical education in China, problems which stop school-age children with special requirements from accepting appropriate education.

(1) During the previous half century, America has accumulated a great deal of experience in special physical education, but China is still in the initial stages due to a training system that must be improved gradually. (2) There is an enormous gulf between the training objectives of special physical education in China and the USA because China focuses mainly on cultivating compound talents on teaching, which covers a wide range of jobs, while the US has a more distinct objective - cultivating special physical educators who are trained on how to teach. (3) In their training form and education system, the US has diverse training forms, whereas China's training features a single form, long cycle, and a narrow range. (4) When setting the curriculum, special physical education requires a high level of integration between "physical education" and "special education". The curriculum of universities in the US is generally more integrated, with a close relationship between theory and practice, and highlights the significance of special physical

education; whereas the Chinese curriculum is still focused on physical education related courses, with special education as a supplement. (5) The US has a relatively sound system for assessing the quality of special physical education, while China has no authoritative training guideline and quality assessment standard, and no special physical educator qualification system. This obviously means the assessment system for special physical education must be improved.

Although there is a large gap in the APE development degree and teacher training mode between the US and China, special physical education in the United States and China have both undergone a similar stage from their beginnings and gradual development. China's APE stage of development and the problems faced, have already been experienced and faced in the US, so after decades of development, the United States, in accordance with the legal requirements to establish and develop a CAPE system, have enhanced the level of the nation's special physical education and have also made the APE into a new stage of development. Moreover, China and the United States have some similarities in their cultivation systems at different levels. For example, at the level of cultivating goals, their main goals are to train teachers so as to ensure the quality of education. In terms of training mode, the sources of human resources in the two countries are diverse, but they are mainly graduates of undergraduate education. In terms of curriculum, the basic theoretical framework for physical education in the two countries is also the same. China can draw lessons from the experience of the US by solving the existing problems and by setting up an APE certification system best suited to Chinese conditions.

4.5 Try to investigate the adapted physical education certification system in China

After comparing and analyzing the CAPE system in United States and existing special physical educators training mode in China, the adapted physical education certification system in China could be adjusted on the basis of the US CAPE system.

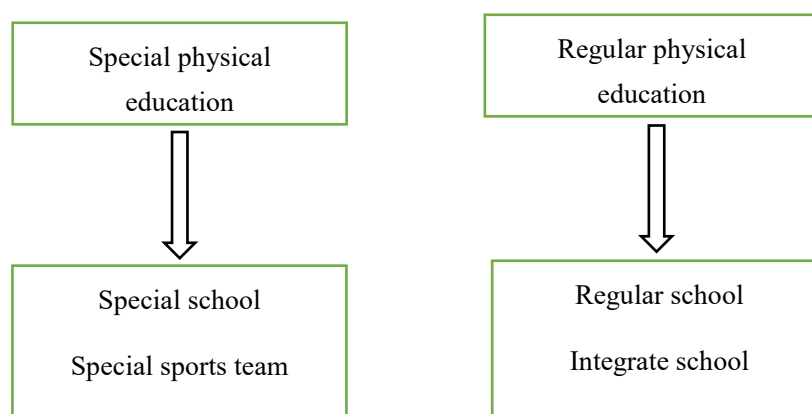
First of all, maybe China need to establish adapted physical education national standards within the scope of national unity and which suit our own characteristics. The purpose of establishing a national standard, as with establishing APENS in United States, is to ensure that

children with special physical education needs, as offered by "qualified professionals", is via a unified standard and knowledge system that will ensure that physical educators have enough knowledge and the theoretical level needed to engage in the related work, while simultaneously ensuring that the quality of physical education teaching and student needs can be met.

Only an adapted physical education national standard can specify the level of skill and quality needed by special physical educators. The existing training institutions and schools also could also learn to cultivate students' goals according to the national standard, so that physical education teachers should have sufficient knowledge and skills, and students majoring in physical education at the university should be in accordance with the training reached by teachers of physical education in higher grades in elementary school.

Colleges and universities can adjust their existing courses and curriculum structure to make their students accord with the national standard, and meet the needs of the job. As the previous case study shows, China's current PE teacher training mode is similar to an isolated mode, which means the employment range for graduates of specialized physical education in the special physical education area (teacher\ coach\ researchers and managers) is narrow. Regular physical education major students who want to work as normal school physical education teachers, etc., find they don't have the capacity to meet the demand of special needs students. In an integrated school and "learning in regular class" situation, this model has been out of the question, but with the development of inclusive education, the exposed problems will be more and more serious, until finally, those with regular sports can adapt their knowledge and skills to meet the requirements of inclusive education for teacher quality.

Figure 4 China's current special physical educator cultivated mode

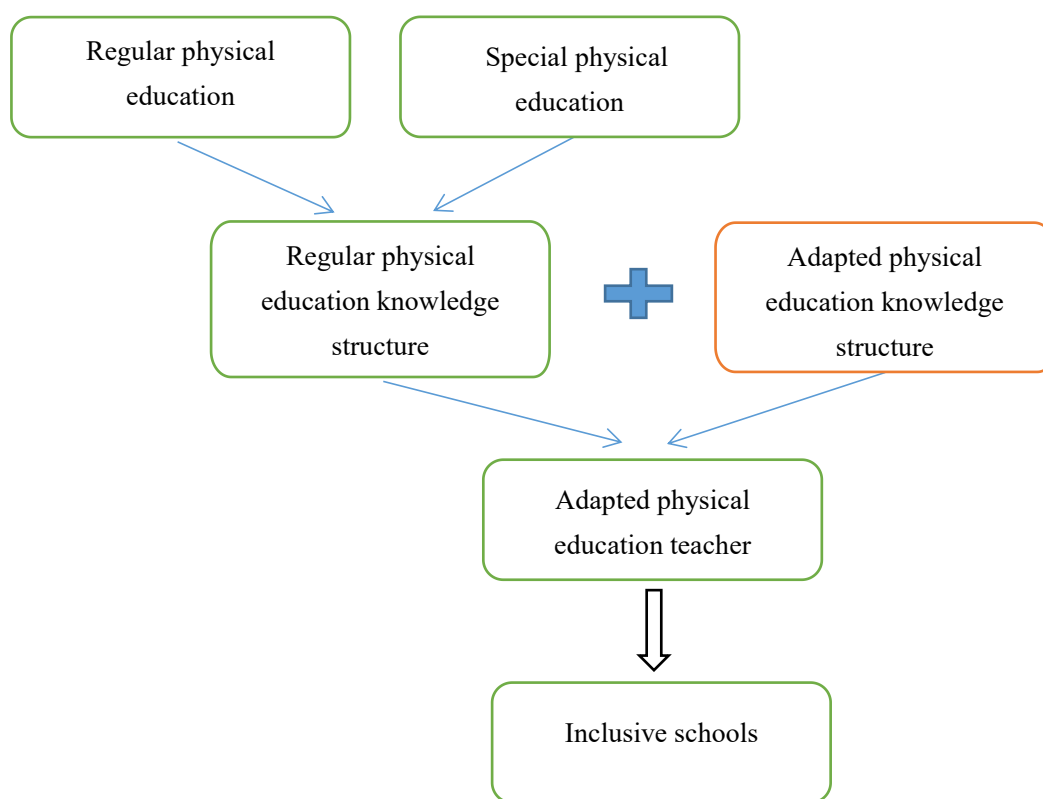


These should be based on the existing mode of education, so some courses and curriculum systems may be changed to enable existing special physical education major and regular physical education major basic course to include ordinary P.E. knowledge and skills of learning. Then the appropriate APE courses can be added, or major or minor degrees can be set to teach adapted physical education related knowledge; then students and people interested in or who need this knowledge and skills are free to choose.

There is some difference between ordinary P.E. major students and special P.E. major students at the time of adding courses, so regular P.E. students must add the complete APE knowledge structure, whereas the additional knowledge structure of special P.E. students is less because they have already learned the SPE contents of the APE knowledge structure.

Combining the previous research on special physical education courses in universities in mainland China, the content of pedagogy and physical education may be merged as an ordinary sports module in the future. The rehabilitation and medical sciences, adaptive physical education content and related practice links are classified into APE teaching content modules as students' optional or minor courses. In this way, students can grasp the APE knowledge content and accumulate necessary basic experience through certain content learning and practice. Combining the ongoing credit-system education reforms in Chinese universities, making teaching more flexible, more targeted, and more in line with the trend of inclusive education development. This kind of curriculum reform should be able to gradually adapt to China's environment and help transform special physical education to adapted physical education, and ultimately serve inclusive education.

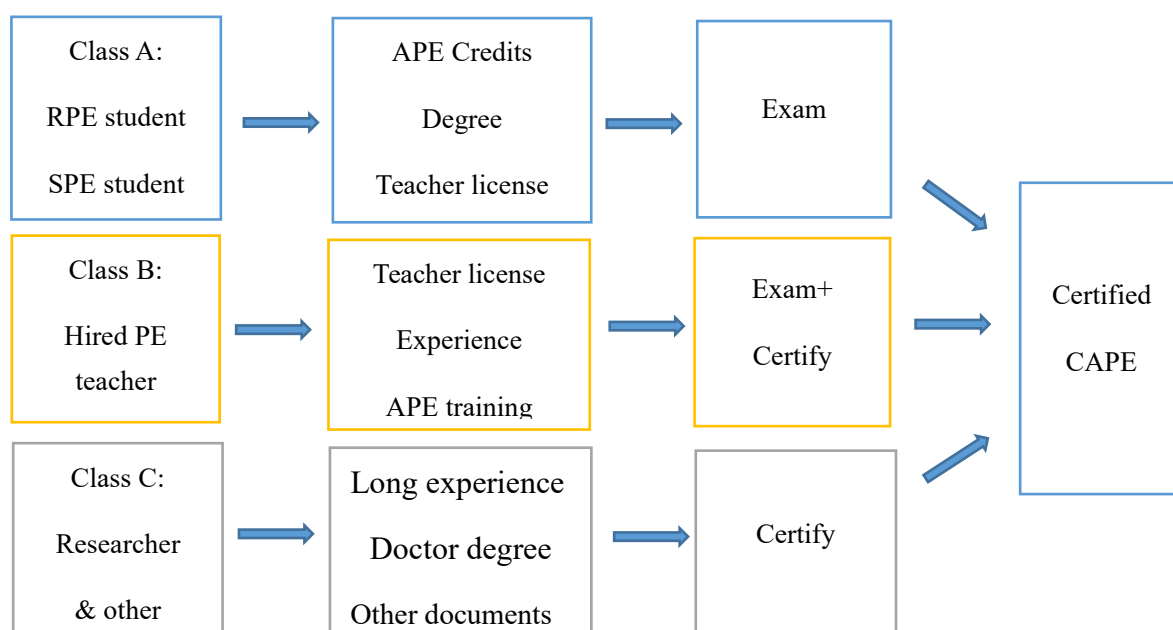
Figure 5 Recommend Adapted physical Educator cultivation mode in the future



The last step is to build a certification model because certification enables a judgment to be made as to whether a person accord with the requirement of national standards, with the corresponding knowledge and skills, for which they receive a certificate of passing. When combined with national standards, certification can improve the professional knowledge and technology level of physical educators, help a unit choose and employ persons who will meet their requirements, while simultaneously certifying their personal capabilities. The certifying methods can refer to the United States by adopt their method of testing and certification.

Depending on the source of the participants of certification, they can be roughly divided them into three parts: a) university graduates and people engaged as physical education teachers; b) has been engaged as physical education teachers; c) scholars engaged in research on special physical education, organizations and institutions.

Figure 6 Certification mode of CAPE system



This is aimed at first kind of person, so whether it is special professional sports or conventional sports, the test should still be taken. e However, the exam qualification has certain requirements this will ensure the rationality of the certification exam and the authority; for example, in order to sit the exam, a bachelor degree is needed and during undergraduate study there are a certain number of adapt physical education related courses, with primary and secondary school teachers certificate (To pass the exam, all undergraduate students can participate) and a certain time of practice needed.

For class b people, they must have been teaching (have a teacher certificate) and must meet the needs of adapted physical education; this can be met by a combination of certification and exam. For example, they can be certified by have a long period of teaching experience and practice rather than by a certain fraction of APE courses or continuing education training. If the course score is not enough, they can take the exam, and if the scores are course credits, they will be certified.

Class c people can adopt the method of certification, either by a long teaching experience, having a doctor degree at adapted physical education or related major, or other documents to prove they have been engaged with adapted physical education or related research.

Chapter Five

Discussion and Conclusion

1. Discussion

The Salamanca statement calls on all governments and urges them to provide the budgetary priority and highest policy in their education system to enable them to include every kid, without considering their difficulties or individual differences. As a matter of law or policy, governments are to adopt the principle of inclusive education by enrolling every child in regular schools, unless there are compelling reasons for doing otherwise (Salamanca statement, 1994). As participants in the Salamanca statement, 1994, China and the United States government made a positive response to the declaration, with a commitment to develop special education and try to make education inclusive.

Since physical education is the indispensable component of education, it is the right that every child should have, because it enhances their physical functions and has positive effects on their self-esteem, behavior, and happiness (Strauss, Rodzilsky, Burack, & Colin, 2001), particularly children with special needs. Physical education could for instance, make a unique condition up and be a vital instrument in educational the provision for students with EBD, and if supported by flexible pedagogical exercises and an innovative curriculum, PE can have positive connotations undoubtedly on the inappropriate behavior and oppositional of children with EBD, and also on their psychomotor development (Medcalf, Marshall, and Rhoden, 2006).

In the USA, public Law 94-142, the Education for All Handicapped Children Act, requires that physical education be serviced by qualified human resource, particularly designed if needed, and be made available to all eligible pupils with disabilities (Education of the Handicapped Act, 1977). Because this federal law mandated that physical education services be provided by “qualified professionals”, before the “Salamanca statement”, the NCPERID in 1991, was made up of Adapted Physical Education National Standards as the unified standard nationwide, to ensure

that teachers have the knowledge and skills needed to provide an excellent physical education service to children with special needs. According to this standard, the United States gradually formed a certification system of adapted physical education that consisted of a full range of contents, including a knowledge structure, training, appraisal and certification. This standard can prove that individuals have the capacity to provide qualified physical education to the students with special needs as long as it is through this certification.

Special education developed late in China; it was influenced by the mainstreaming concept from the West, and it began to change the education mode from special school education to regular school and regular class education for students with special needs. A trial mode of learning in a regular classroom that commenced in 1987 in Mainland China has gradually transformed to a mainstreaming mode of special education. While there are still many special education schools (Xiao Fei, 2005), there is no professional standard for adapted physical education in Mainland China, nor is there any regulation or professional qualification that adapted physical education teachers should have. Indeed, many teachers never participate in any relevant skill training after being hired. (He, 2010) On this basis, a lot of teachers of common classrooms and special education schools do not have the ability to teach physical education to students.

This research therefore attempts to compare the current mode of adapted physical education and special physical education teachers in America and China, and discuss how to set up an adapted teacher certification system in China. The author mainly discusses the following problems.

1.1 Development of adapted physical education certification system in the United States and China

America started training special physical education teachers in 1967; they established APENS in 1991, set up a certification system, and over the next 20 years, built a refined, effective, and practical APE certificate system. This system is based on federal law and contains unified nationwide standards, and it also has multiple training modes and authentication methods. Federal law guarantees the legal position and legitimacy of this APE system. The NCPERID has made up

APENS as the unified standard nationwide to ensure that teachers have the knowledge and skills needed to provide an excellent physical education to children with special needs. On one hand, detailed conditions of accession and authentication methods can cover as large scope of APE educators as is possible to allow as many people as possible to prove their APE education capability in order to fill the vacancy for APE educators in America, while on the other hand, multiple examination and authentication methods can ensure that qualified and high level educators will provide the appropriate quality of education service to give excellent education to all every child with special needs.

The cultivation of special education teacher did not start in China until 2001, after which schools started to set up an SPE discipline, but it developed very slowly and only ever cultivated a few students. Some schools recruited undergraduate students, while other schools only recruited graduate students, but since students with graduate and above degrees in China are mainly researchers, only a few work as teachers.

At present, as per the SPE teachers training system in China, the single source of teachers with SPE skills are under graduate students from colleges, and the long cultivation period of 4 years, means that the demand for SPE teachers with special skills cannot be met. Some SPE schools hire part-time teachers or teachers with other professions but this leads to teachers with unsatisfactory skills and poor quality SPE courses. Meanwhile, the lack of training for working educators does not resolve these issues and it also prevents new teachers from learning new professional knowledge. As a result, China still faces the problem of insufficient teachers, teachers with unsatisfactory professional skills, and poor quality SPE courses under the current SPE teachers training mode.

1.2 Situation of SPE teachers in Mainland China

The following issues emerged from the questionnaire survey:

- a. The proportion of physical education teachers is less than teachers of other subjects, and there are many part time teachers with a high workload

- b. There are no teacher majors in SPE, some teachers major in common physical education, but this leads to lack of professional knowledge and skills
- c. Most SPE schools have no teaching program and materials, so teachers have no standard in education and cannot ensure teaching quality
- d. The commencement rate of physical education is very low and weekly class hours do not meet national requirements
- e. There is virtually no long term systematic training. Most teachers are willing to be trained, but feel their abilities are currently inadequate.
- f. Teachers find it difficult gain employment, promotion, and remuneration and are not satisfied with their current situation

The author believes these issues stem mainly from a lack of awareness of disabled physical education in China; while the nation has requirements of physical education for the disabled, it does not have enough knowledge of how disabled people receive an education, and has no clear awareness of the standard of special physical education needed. Moreover, since disabled physical education started late in China and never formed an effective standard teaching system for physical education teachers, there are not enough physical education teachers in special education schools, and the number of SPE teachers with professional and adequate skills is very small. This means existing teachers cannot meet the education requirements due to a lack for professional knowledge and experience.

1.3 The degree of demand for APE teachers in Mainland China

In this part of the study, since the data is incomplete, the number of all teachers in special schools in China was adopted when the variable H was substituted; the conclusion was that 24891 APE teachers are still needed in China. However, APE teachers only account for a very small proportion of all special school teachers, so the number of APE teachers really needed is much more than 24891.

The existing method for cultivating APE teachers in China is a 4-year full time undergraduate course through PE with a major in special education at normal universities. According to the statistics in 2014, a 4-year special education major is only offered by 69 universities, and only about 10 having adaptive PE teachers with annual graduates of no more than 500 people. According to the minority standard of 24891 people, it might take about 50 years to meet the APE requirements in China. Obviously, the current method cannot meet the requirements.

1.4 Compare the adapted physical educators' training and qualifying mode

After researching the certification system of American adapted physical activity and comparing the system of special physical education teachers between China and America, we found large gaps between them in the present development of special physical activity education. There are many problems in special physical education in China, problems which stop school-age children with special requirements from accepting appropriate education.

During the previous half century America has accumulated a great deal of experience in special physical education, but which in China is still in its initial stages due to a training system that must be improved gradually. In training form and educational system, the US has diversified training forms, whereas China's training features a single form, long cycle, and a narrow range. The curriculum of universities in the US is generally more integrated, with a close relationship between theory and practice, and highlights the significance of special physical education; whereas the Chinese curriculum is still focused on physical education related courses, with special education as a supplement. The US has a relatively sound system for assessing the quality of special physical education, while China has no authoritative training guideline and quality assessment standard, and no special physical educator qualification system. This obviously means the assessment system for special physical education must be improved.

After researching the American national institute of adapted physical activity and the system of relevant certification, author believe that building a Chinese adapted physical activity certification system by referring to the American system could to solve the existing problems in China. This system is divided into three parts, including national standard setting, the related

university education curriculum structure reform and the inspection and the establishment of a three levels certification program. However, this is only a preliminary study on the above three parts. The establishment of standards requires rigorous and scientific discussions, especially the progress of the modular curriculum. The standards of each school will be different, and it will be difficult to have hundreds of schools nationwide. Unification of universities, and curriculum reform involves other related majors in the school, the process of transformation and adaptation will not be too easy.

2. Conclusion

To provide a quality education (including physical education) to every child is now a globally accepted reality. For this purpose, school systems in developed countries are moving from "mainstreaming" and "integration" towards the development of "Inclusive Schools" (Ainscow, 1993). China is also in a transition stage as a developing country, but still has some problems with inclusive physical education compared to developed countries. For example, China was influenced by the mainstreaming concept from the West, and started to change their mode of education from special school education to regular school and regular class education for students with special needs. A trial mode of learning in regular classrooms has gradually transformed to a mainstreaming mode of special education. Nevertheless, there is no professional standard for adapted physical education in Mainland China, or regulations for professional qualifications that adapted physical education teachers should have. This created a situation whereby special physical education teachers lack the knowledge and skills needed to provide a qualified PE service. In the meantime, because there are many students in China with special needs, there is a shortage of PE teachers who can meet the requirements for adapted physical education, and the speed at which teachers are trained in the present education system is too slow, it cannot meet the requirements.

This research can be divided into four parts. The first part is a systematic review to examine the development of adapted physical education teachers' qualification system across the world. The "2013 Education Statistics report of China" (MEPRC, 2014) and the SPORTDiscus, Pubmed, Physical Education, and CNKI literature databases were used in this research. In the second part,

the author distributed 100 questionnaires to about 100 teachers employed by more than 20 special schools; the result showed that most teachers believe their existing skills cannot deal with inclusive physical education, but they are willing to be trained. The third part used a mathematical calculation method to study the demand for quantity and speed at which current Chinese APE teachers are trained. The result shows that mainland China needs more than 24,000 APE teachers and the current training mode without changes cannot meet the demand. The final part is a comparison between adapted physical educators' training and certify mode using a four-stage comparative methodology. The result is that China's legal protection, course system, training system, and quality evaluation has certain gaps with the United States, and these gaps must be filled in order to solve the present problems.

Combined with the result of up front research, is a discussion to investigate the CAPE system in China. China should to establish adapted physical education national standards within the scope of national unity, and which suit our own characteristics. With an adapted physical education national standard, education institutions can specify the level of quality or skill needed by physical educators according to the national standard specification. Existing training institutions and schools can also adjust themselves to cultivate students' goals according to the national standard. Next, colleges and universities can adjust their existing courses and curriculum structure to ensure their students meet the national standard, while at the same time meeting the needs of the job. The last step is to build a certification model because certification is through certain means to judge whether a person meets the requirement of national standards by having the corresponding knowledge and skills, and receives a certificate of passing. The participants of certification can be divide them into 3 parts, a) university graduates and people working as physical education teachers; b) has been engaged in the work of physical education teachers; c) scholars engaged in research on special physical education, organizations and institutions. We can refer to the United States, and adopt their method of testing and certification.

The main result of this research is the exploration and demonstration of China's system for training and certification of physical education teachers in the future. The system consists of three parts: certification standards, reform of existing training curriculum, and model of certification for teachers. Among these, the primary one is the model of certification for teachers. Through one

systematic and scientific certification, it should be able to effectively alleviate the current shortage of teachers and the low quality of teaching in China. This may be the most urgent problem to be solved. Overall, this research is only a small attempt at setting up an adapted physical education certificate system that fits Chinese characteristics and our current situation. It provides some materials, ideas, and suggestions for building a future CAPE system in China in order to solve the problems in adapted physical education and provide high quality physical education to children with special needs. The Chinese government has been trying to improve our international profile by aligning the development of special education with international practice. A gradually increased investment in special education and policy support is slowly attracting more and more attention to special education and adapted physical education. The author hopes to help future researchers to learn more about the CAPE system and provide some help to future researches via this research.

3. Limitations

This study has several limitations, which are discussed here, as well as directions for future research.

Firstly, in the questionnaire survey, all the participants are physical education teachers from over 20 special education schools in Mainland China. As mentioned above, the development of special education in China is in a transition stage from special school education to special education in inclusive education and normal schools. Despite the large number of special schools, the main mode of special education is learning in a regular class, i.e., most students with special needs receive education in common schools. The purpose of the questionnaire survey was to study the current situation of special physical education, but due to the limited research condition (there are too many common schools to know which ones have students with special needs), only teachers in special schools could be respondents (it is difficult to find special education teachers in common schools). Future researchers should add special physical education teachers in common schools to obtain more comprehensive results when researching special physical education.

Secondly, the author mainly researched on how to set up adapted teacher certification system by comparing the system for training adapted physical education teachers in America and China. However, the legislation and administration systems in America are different from those in China, and so too are the methods used to establish an industry standard. In America, it is an association that sets up the national standard according to national laws, and the maker is a civil organization. However, in China, a similar standard is regulated by laws decreed by the government, and the final maker is a government authority (Ministry of Education, 2004), even though detailed regulations are drafted by experts and organizations in the relevant industry. This research does not contain relevant system problems, so future researchers could continue to study problems in relevant law and administration systems to establish standards and issue certifications in the two countries to improve the system for certifying adapted physical education teachers.

Thirdly, theories and the relevant knowledge of adapted physical education is a continuous process, along with the development and innovation of knowledge and theories. Therefore, the requirements for adapted physical education teachers will increase over time; which means teachers must continue to study and update their knowledge, and improve their teaching skills. As proof of teacher qualification and ability, a certificate of adapted physical education should have a term of validity, so that after the expiration date, teachers should update the certificate by proving they still have the knowledge and skills to meet the requirements of the times. Therefore, a teacher certification system should have a procedure whereby certificated teachers can update their certifications. The author believes that the key problem with teaching physical education in China is to set up a system which has different procedures for updating a certificate and acquiring a new certificate. As a result, this research only examines the initial certification system it does not mention updating certificates. Future researchers can suggest a validity term and certificate update procedure after a certificate has been obtained.

4. Recommendation

4.1 Recommendation for educational administration

Since our education system is run by the government, any advice directed towards educational administration must establish a standard certification of special physical education teachers to ensure the quality of teachers. (1) The government can take the lead by authorizing experts to establish a standard certification of special physical teachers. (2) Promote the reform of special physical educational courses. After establishing an evaluation system for certifying special physical teachers, it is more convenient for them to study and obtain the certification required for special physical education. For serving teachers who already have the credentials for physical education teachers, they can easily obtain the credentials for special physical teachers by completing the courses of special physical education rather than having to relearn other relevant subjects. In this way we can greatly improve the present situation and speed up future training.

4.2 Recommendations for educational research

At present the research on special physical education teacher certification in China is not good enough, so a great deal of work is needed to strengthen the research process. (1) Establish standard research for special physical teacher certification: the academic community should apply themselves to studying the professional requirements needed for special physical teachers. (2) Research the course design for cultivating special teachers. We should increase the content of special physical courses to strengthen the working ability and open up the eyes of students by including practical courses that will encourage them to connect with disabled children by laying a foundation of adapting work positions for them. (3) Research the cultivating mode of special physical teachers. We should cultivate professionals, especially those with compound talents in special physical education. Setting special physical education courses for normal university students can help satisfy the requirements of special physical teachers in our country and help us to adapt the worldwide trend of inclusive education.

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Appendix

Sample of survey questionnaire

《特殊教育学校体育教育现状调查与对策研究问卷》

尊敬的老师：

您好！我是香港教育学院的博士研究生，正在进行有关适应性体育教师资格认证系统的研究，通过本调查旨在了解和反映您所在的特教学校体育教育开展的基本情况及其存在的问题，为更好地发展特教学校体育教育事业提供参考意见。作为在特殊体育教育第一线的工作者，您的意见对本研究有至关重要的作用。本人保证此次调查只用于学术研究，不会对您和学校造成任何影响，请您放心填写，衷心感谢您的支持和帮助！

姓 名： 阎滨

填表说明：

- ①请仔细阅读问题，在合适答案前的选项上打“√”，或者在“___”处填写适当的内容。
- ②请看清题目要求，若无特殊说明，每一个问题只能选择一个答案。

一、体育师资情况

1、您所在学校的名称

2、贵校目前共有体育教师___人，其中男体育教师___人，女体育教师___人，专职体

育教师___人，兼职体育教师___人。

3、您的年龄是___岁。

4、您从事特殊体育教育工作的时间是_____年。

5、您现有的学历：

A、高中或中师 B、大专 C、本科 D、硕士 其他

6、您的职称：

7、自参加特殊体育教育工作以来，您参加的体育学术交流活动：

A、国家级（ ）次 B、省部级（ ）次 C、市厅级（ ）次 D、没有

8、您的专业：

A、体育教育 B、特殊教育 C、特殊体育教育 其他

9、您接受过哪一种继续教育培训？

A、从来没有接受过培训 B、接受过系统的培训 C、接受过短期的培训

10、您喜欢特殊体育教师这一职业吗？

A、非常喜欢 B、比较喜欢 C、一般 D、不喜欢 E、非常不喜欢

11、您认为您所从事的工作重要吗？

A、非常重要 B、比较重要 C、一般 D、不重要 E、非常不重要

二、体育课程与教学情况

12、贵校目前在校生共有_____人，教学班共有_____个。

13、贵校体育课每班每周安排_____课时？

14、贵校每节体育课的授课时间为_____分钟？

15、您平均每学期带几个班？

A、2个及以下 B、3—4个 C、5—7个 D、8个及以上

16、您每节课所教授的学生平均人数？

A、10人以下 B、10—20人 C、21—30人 D、31—40人 E、41人及以上

17、贵校体育课的具体实施情况如何？

A、能够完全按照课时计划正常开课 B、基本按照课时计划开课，偶尔被其他课程替代 C、经常被别的课替代 D、完全不能按照既定课时计划实施

18、您在进行体育课教学中是否有教学大纲和体育教材？

A、都有 B、都没有 C、有大纲无教材 D、有教材无大纲

★如果有教学大纲，贵校执行的是何种教学大纲？

A、省统一的教学大纲 B、市（地级市）统一的教学大纲 C、自编的教学大纲

★如果有体育教材，在体育课教学中您所使用的是什么性质的体育教材？

A、使用同年级健全人群的体育教材 B、专门针对残疾学生的体育教材

C、在健全人群的体育教材基础上，有所改变

19、贵校的体育教学目标是：（多选）

A、增进功能缺陷补偿与康复 B、促进残疾学生身体、心理健康发展

C、丰富残疾学生的文化生活 D、培养残疾学生自信、自立、自强的精神

E、使残疾学生掌握体育的基本知识、技术、技能

F、培养残疾学生终身体育意识、习惯和能力

G、开发残疾学生某项体育活动的运动潜能

H、促进残疾学生社会活动能力的发展，提高其社会适应能力

其他

20、贵校安排的体育教学内容有：（多选）

A、篮球 B、足球 C、排球 E、武术 F、乒乓球 G、体操 H、田径 I、体育游戏 J、体育舞蹈 K、健美操 L、羽毛球

其他

21、您认为贵校所安排的体育教学内容与普通学校体育教学内容有何不同？

A、没有差异，与健全学生一样 B、与健全学生相差不大但有区别

C、有很大区别，以康复补偿为主

22、您是否参加过相关的职业培训？ A、是 B、否

★若有参加过，请您列举出培训的主要类型：

23、你是否愿意参加为了认证资格而举办的培训？ A、是 B、否

★若资格认证需要进行考试，你是否愿意参加，为什么：

24、您在体育教学中，主要采用的教学方法：（可多选）

A、视觉手语教学法 B、听觉触摸教学法 C、启发式教学法 D、情景教学法
E、调整式教学法 F、个别化教学法 G、分解与完整法 H、游戏与比赛法

I、讲解与示范法 其他

25、您在上体育课时所用的教学组织形式为：（可多选）

A、按自然行政班级进行教学 B、按性别进行分组教学 C、按年龄进行分组教学
D、按残疾类型进行分类教学 E、按兴趣进行分组教学
F、按能力强弱分组教学

其他

26、您觉得大多数学生体育课后身体变化情况会如何？

A、无感觉 B、全身微微发热 C、微微出汗 D、中等出汗 E、出大汗

27、您评定学生体育成绩的方法：（可多选）

A、评语制 B、等级评定式 C、等级评定与评语式相结合 D、百分制

其他

28、您对学生体育成绩评定依据是：

A、使用同年级健全人群的考核标准 B、参考同年级健全人群的考核标准，适当调整

C、根据学生实际情况，学校制定统一的考核评价标准

D、体育教师自行制定考核评价标准

29、在体育教学中，您是否根据不同残疾学生的特点有针对性地安排康复锻炼？

A、经常安排 B、定期安排 C、很少安排 D、偶尔安排 E、从来没有安排

★如果您在体育课中有针对性地加强了学生康复锻炼，您都采用了那些内容或措施？

盲：

聋哑：

智障：

肢残：

其他：

三、课外体育活动情况

30、贵校是否组织学生进行早操的锻炼？[如果回答“否”请跳过 31、32 题]

A、是 B、否

31、带领学生进行早操的频率是 1 周_____次？

32、早操常采用的活动内容是：（可多选）

A、集体做广播操 B、保健体操 C、矫正体操 D、集体跑步

E、游戏 F、自由活动 其他

33、贵校是否组织学生进行课间操的锻炼？[如果回答“否”请跳过 34、35 题]

A、是 B、否

34、带领学生进行课间操锻炼的频率是 1 周_____次？

35、课间操常采用的活动内容是：（可多选）

A、集体做广播操 B、保健体操 C、矫正体操 D、集体跑步

E、游戏 F、自由活动 其他

36、贵校是否组织学生进行课外体育活动的锻炼？[如果回答“否”请跳过 37、38、39 题]

A、是 B、否

37、带领学生进行课外体育活动的频率是 1 周_____次？

38、每次带领学生进行课外体育活动的长度是_____分钟？

39、贵校组织学生进行课外体育活动时常选择的内容是：（多选）

A、篮球 B、足球 C、排球 D、拔河 E、跑步 F、跳绳 G、体育游戏 H、乒乓球 I、康复体操 G、体育舞蹈 K、垫上运动 L、踢毽子 M、丢沙包 其他

40、贵校有哪些学生体育运动队？（可多选）

A、田径队 B、门球队 D、乒乓球队 E、篮球队 F、足球队 其他

41、贵校运动队的训练方式为：

A、常年训练 B、赛前短期集训 C、学生分散到外单位训练 D、几乎不训练

其他

42、贵校每年运动会是如何召开的？

A、每年定期召开 B、不定期召开 C、从来不召开

★如定期召开，每年举行_____次全校性综合运动会？

★如不定期召开或从来不召开，您认为原因可能是：（可多选）

A、学校场地器材不足 B、学校体育经费短缺 C、师资力量不足

D、学生参与积极性不高 E、学校和学生自身特殊性所致

其他原因

四、体育场地器材情况

43、请描述贵校运动场地的情况（如果没有请用数字“0”表示）

____米标准田径场__块；不规则田径场__块；篮球场__块；排球场__块；足球场__块；健身房（体操房）____个；乒乓球室____个；律动室____个；体能康复训练室____个

其他

44、贵校现有的体育场地器材是否能够满足：

★体育教学的需要： A、完全满足 B、基本满足 C、不能满足

★课外体育锻炼的需要： A、完全满足 B、基本满足 C、不能满足

★课外运动训练的需要： A、完全满足 B、基本满足 C、不能满足

45、贵校有没有针对残疾学生特点自制某些简单实用的体育器材？ A、有 B、没有

★如果有的话，请您简单列举出几种自制的简易体育器材：

五、其他情况

46、您认为提高特殊教育学校体育教育水平的途径有哪些？（可多选）

A、教育部门和科研机构根据我省特教学校的实际情况，制定出符合不同残疾类

型学生

身心特点的体育教学大纲以及教材

B、鼓励支持体育教师参加各种形式的职后培训，提高体育教师个体差异执教能力

C、配备适合不同残疾类型学生的体育器材，鼓励师生动手制作简单而实用的体育器材

D、优化体育教学内容，选择适宜特殊学生的、贴近实际生活的内容，并使之趣味化

E、尝试打破传统封闭式的教学管理体制，在保障残疾学生安全的情况下，将体育课融

入周边社区，扩大学生对外交流空间，并鼓励学生家长参与进体育活动中

F、初步建立符合我省实际情况的特殊体育教师资格认证制度，规范特教师资准入资格

G、加强对特教学校和特教师资就业的政策引导，完善就业保障体系，提高特教老师社会地位，为特教老师就业提供政策和制度保障

H、完善特教体育教研活动制度，增加体育教师交流机会

I、其他

47、您认为现阶段您在教学方面都存在哪些困难和不足？

48、根据您的切身体验，您对于当前特殊教育学校体育教育有什么意见和建议？
（请您务必写下您的宝贵意见，非常感谢！）

本问卷到此填写完毕，请您检查后及时返还给发卷人，再次对您的热心帮助和合作表示衷心的感谢！祝您工作顺利，身体健康，万事如意！