

The Application of Body Rhythm in Music Therapy - Taking the Experience of Autistic Children as An Example

Yuchi Zhang

Sichuan Normal University, Chengdu, 61000

Abstract: *According to the data of 2021, the number of autistic people in China exceeds 10 million, and the number of autistic children exceeds 2 million. However, there is no specialisation in autism rehabilitation and intervention in the domestic education system, and most practitioners receive training only after joining the profession. In the new period of the "14th Five-Year Plan", the state has put forward new guidance for the development of the autism industry, and the number of special education institutions and practitioners has increased rapidly, but at the same time, they are also facing the bottleneck of the application of diversified methods of rehabilitation therapy, and the insufficient construction of the accreditation system and standardisation, and other problems. Based on the concept of music therapy and the scientific theories required for the rehabilitation of children with special needs, the study explores the integration of the role of music and rehabilitation interventions, combining musical elements with the practice of somatic rhythms, and paving the way for medical rehabilitation after long-term planned training, promoting physical coordination, exercising imitation and observation skills. The assessment system for the application of body movement derived from the practice is summarised to provide reference for the service model and future development of children with special needs.*

Keywords: musical rhythm; music therapy; autism spectrum disorders; children.

1. INTRODUCTION

Autism Spectrum Disorder (ASD), or autism for short, is a neurodevelopmental disorder that is typically characterised by impaired interaction and repetitive behaviours in social interaction. Symptoms begin in infancy and persist throughout life, with unknown causes and no targeted medication available, and its incidence is rising globally. 2021, the "14th Five-Year Plan of Action for Enhancing the Development of Special Education" [1], formulated by China's Ministry of Education, the National Health and Health Commission, and the China Disabled Persons' Federation, states that "Aiming at appropriate integration, promote integrated education in accordance with the expansion of services in school segments" is the guiding principle. Special education schools and institutions around the world, while responding positively, are also facing problems such as further improving the curriculum and teaching materials system, exploring the diversification of education modes, and improving the professional level of the teaching force.

Somatic rhythm, a core component of The Eurhythmics of Jaques-Dalcroze, refers to the use of the body as a musical instrument to make controlled movements to express music in response to changes in the tempo, rhythm, intensity, phrasing, and other elements of the music heard. This pedagogy is more commonly taught in professional music colleges and universities, but is not popular among school-age youth, and is even less common in the field of special education. In the spirit of "the stone of other mountains can attack jade", whether the application of the principle of physical rhythmic teaching method can be combined with music therapy to achieve the improvement of special children's muscular motor ability, imitation ability, participation ability, as a reference for the medical rehabilitation assessment, and to play a certain role in rehabilitation intervention has become a new exploration of the multi-treatment method in recent years in the field of special education. It has become a new exploration of multiple therapeutic methods in special education in recent years.

2. SOMATIC RHYTHMS ARE IN LINE WITH THE IDEA OF MUSIC THERAPY

The concept of somatic rhythm comes from the Swiss educator and musician Emile Jacques Dalcroze, who founded the Dalcroze teaching system, known as one of the "three great pedagogies of the world", and who believed that learning is based on a healthy combination of the body, mind, and emotions. He believed that learning was based on the healthy combination of body, mind and emotions. As a music educator in the 19th century, Dalcroze's educational thought embodies a lot of ancient Greek philosophical concepts, and he has

repeatedly referred to Plato's statement that only when a person combines the beauty of the inner spirit with the beauty of the behavioural and physical state is "the most beautiful and the most adorable realm"[2] , and to the French thinker Jean- Jacques Rousseau, as well as the French philosopher Jean-Jacques Rousseau, and the French philosopher Jean-Marc Jacques Rousseau, as well as the French philosopher Jean-Jacques Rousseau. Jacques Rousseau and the Swiss educator Johan Heinrich Pestalozzi also influenced Dalcroze, who advocated following nature, responding to the child's natural curiosity, and using the ability to observe, imitate, experience, and think to carry out education. It was believed that the human being is an indivisible whole, consisting of spirit, body and intellect, and that education should develop in accordance with the child's natural potential. Dalcroze's philosophy in forming a system of pedagogy is perfectly in line with this: music education should be available for every child, and not designed for a few gifted or musically promising children [3]. This is also consistent with the philosophy of music therapy for exceptional children. Thoughts about the therapeutic utility of music have emerged as early as 320 B.C. in ancient Greece, where Aristotle (320 B.C.) believed that the power of music had an emotionally cathartic function and value. The famous Greek physician Hippocrates, known as the "Father of Medicine", influenced the development of medicine for the next two centuries with his "Four Fluids", namely Blood, Mucus, and Phlegm. P Phlegm They are Blood, Mucus (Phlegm), Yellow Bile, and Black Bile. Each fluid has a different ratio but interacts with each other, and human health is a result of keeping them in balance, while an imbalance of two or more fluid elements will lead to disease. The role of music was also differentiated by the four fluid theories, for example, at the time, it was believed that the role of music led to moral degradation or improvement, or enhanced emotional guidance and catharsis, such as the singing of hymns, which, even in the religious milieu of the Middle Ages, was considered to have a calming effect on panic. Plato describes music as medicine for the mind, so choosing music that is appropriate to the patient's current mood and state is what makes music therapy work [4].

In subjective terms, physical rhythm and music therapy follow a human-centred approach, and in objective terms, they advocate adapting to nature, both using abstract musical elements to correspond to human emotions. For example, with children as the object of experience, when children participate in specially designed music activities, they can show their inner joy, anger and sadness through the strength, speed and undulation of the music, so as to alleviate their negative emotions and help achieve the goal of healthy development. The concepts of both are actively pursuing the interrelated dynamics of the human body, brain and mind. This is specifically demonstrated in the special children's emotions changing with their movements accompanied by music. The therapist can feel the children's pleasure and satisfaction at the moment when they wave their arms and make leaping movements.

3. THE UTILITY OF SOMATIC RHYTHMS AND MUSIC THERAPY ARE SIMILAR.

The idea of applying the Dalcroze method originated from a problem that Dalcroze found when he was a composition teacher in Geneva: students were particularly interested in the training of technique, but were not sensitive to the elements and sensibility of music itself [5]. For professional music students, he developed training in sight-reading, improvisation and physical movement. Students were allowed to walk and jump barefoot in the classroom, starting from the experience of music's height, speed, strength and weakness, to fully feel the initial experience of music for human beings. Together with the other teaching components, Dalcroze's repeated practice in the classroom has resulted in a system of pedagogical talent development - sight-singing, ear training, improvisation, and physical movement.

Sight-reading (Solfeggio) focuses on the development of the student's "inner hearing." [6] Dalcroze believed that music should first be understood by the imagination, otherwise melodies would be meaningless, and composition students would not be able to create works that resonate and move them. Almost all of the rhythms in the Dalcroze method of sight-reading can be expressed in conjunction with the movement of the body.

Improvisation is expressed in a combination of ways, ranging from the free playing of an instrument by a student to the improvisation of movement in response to music played by others, to free movement that leads to changes in the teacher's musical accompaniment. "The word "time" can be interpreted as both "time" and the "beat" of the music. It is a key word that is repeatedly emphasised in the Dalcroze method. The improvisation training increases the consideration of the reactions and preconceptions of the experienter to the word "time".

Eurhythmics, the last concept to be developed in the Dalcroze Method, is considered the most central part of the teaching system, and many educators believe that Eurhythmics has inspired and influenced other pedagogies. While somatic rhythm focuses on using the body's sense of balance to express the rhythmic and symmetrical nature of movement in music, such interpretations need to be tightly integrated with sight-reading and improvisation,

adding multiple challenges of listening, imagination, and attention to the experience. In the intellectual and musculomotor perception aspect of music physical rhythmic games are played by the teacher on the piano, and the student responds to the stimuli of the music according to the music, using the body as a form of expression [7], for example, when the light and fast melody of the soprano voice appears, the clapping of the hands corresponds to the rhythmic points, and when the slow accompaniment of the bass voice of the long duration appears, it is reflected by the movement of the feet, and the human body is as if it is another musical instrument echoing with music, and it relies on the movement to show the sound. The human body seems to be another musical instrument that echoes the music, showing the sound and mood through its movements. Human activities determine the speed of movement in space along with the speed of the music, and the body's perceptions are further fed back to the brain for a richer experience and emotion.

Reaction games are also extremely commonly used in body rhythm classes for children with special needs, because they have the function of "awakening" the body and replacing the "class introduction" link. Music played for children with special needs is often "quantized" in phrases, tempo, and pitch in order to allow children to adjust their physical strength and balance based on extremely simple and clear musical elements, such as a fixed number of times in a game song. The musical instructions of "strong, weak, weak, beat the sky" and "low, high, high, down, up, up". The change of instructions is also to allow children to try changes in the body's center of gravity to achieve the purpose of moving limb muscles. Regardless of whether the experience subjects are healthy children or children with special needs, body rhythm uses music instead of verbal instructions to stimulate their responses, thereby exercising the perception of muscles and nerves. After periodic training, some children with special needs have a certain ability to judge time and the intensity of sounds, which is of great help to the rehabilitation of children. Gao Tian, an authoritative scholar of Chinese music therapy, once commented on the principle of Dalcroze's teaching method: "It can be adapted to the levels and abilities of various students." He believes that in terms of clinical application, many music education concepts of body rhythm can be applied to music therapy.

Music therapy, as an emerging discipline crossed with psychology, medicine, music and other disciplines, was born in the 1940s, and modern music therapy has been spreading and applied in China for more than thirty years. It is a combination of scientific methodology based on the different roles of music for human beings as a means of objectively improving interpersonal relationships, promoting physical and mental cognition and overcoming obstacles, and subjectively inducing empathy, aesthetics and creativity. It is a discipline, an art and a combination. It is a discipline, an art and a communicative relationship. Unlike music appreciation and music listening, in the clinical practice of music therapy, the element of music is not in pursuit of professional aesthetic standards, but rather the principle of "therapeutic priority", choosing music according to the characteristics of the therapeutic target and therapeutic purpose.

The music chosen for the somatic rhythm game follows their preferences in special children, with a beautiful, soothing and rhythmic style, and the music appreciated by special children with motor disorders, under the guidance of the music therapist, has a greater role than auditory stimulation alone, and places more emphasis on the multi-sensory response that music brings to the child, e.g., the treatment subject claps his hand on the tambourine at the end of each phrase he hears, and the purpose is that the treatment subject participates in the activity, allowing the brain and nerves to pull the muscles to complete a movement to achieve the purpose of this movement set and make the participant happy. For example, if a client claps his hands on a tambourine at the end of each phrase, the purpose is that the client is participating in the activity, and the brain and nerves are pulling the muscles to complete an action, which achieves the purpose for which it was set, and makes the participant feel pleasure. This shows that the functionalisation of music is an important principle in the rehabilitation of children with special needs.

Somatic Rhythms and the practice of music therapy share a common philosophy. Thayer Gaston, the father of music therapy, believed that "music" is a non-verbal means of communication that derives its power from its wordlessness; that it defines "rhythm"; that it is the organiser and facilitator of music; that music can control behaviour, for example, fast percussion can greatly facilitate physical activity, while longer, slower music has a calming effect on the body. It is the organiser and facilitator of music; it controls behaviour, for example, fast-paced percussion can be a great stimulus to physical activity, while longer, slower music has a calming effect on the body. The way of movement and self-expression in music therapy can be fully realised through the principles and practices of body rhythm, which has a therapeutic effect.

Dalcroze's control of rhythm is synchronised with music therapy. In Neurologic Music Therapy (NMT), especially in the training of motor functions in children with cerebral palsy [8], elements of music provide auditory and tactile

feedback to the body and brain, which are synchronised with the actions of the child [9]. Taking Patterned Sensory Enhancement (PSE) as an example, the three conditions of space (Spatial), time (Temporal), and force (Force) apply all the elements of pitch, rhythm, and volume to the motor concepts, and the movements of the treatment subject are simply changed according to the different combinations of music selected, and the transformed elements can be The changing elements can be used as motor commands to assist the speech to achieve the effect.

4. FORMS AND STEPS OF THE APPLICATION OF SOMATIC RHYTHMIC MOVEMENT IN MUSIC THERAPY

Firstly, the form of the experience is a group experience. As with group music therapy, this allows for the establishment of multiple levels of communication in the somatic rhythm classroom. Group music therapy is appropriate for 8-12 people [10], enough for the therapist to give observation to each member, which is consistent with the special children's somatic rhythm class, and it is easy to lose control by adding too many participants. In addition to completing the movements individually, the experiencer regulates his or her own range of motion while working with others to complete the movements and observes the reactions of the peers. The teacher or therapist can also pay attention to each member and allow neighbouring members to interact.

The practice can be carried out using the following steps:

In co-operation with rehabilitation institutions for children with mental retardation, which are mainly for autistic patients, a fixed age group, class and lesson time are selected. The target age of the classes is between 5 and 12 years old, with 5-12 students in each class, and each experiential class lasts 30 minutes, with two to six classes per week being appropriate. Teaching staffing consists of 1-2 teachers or therapists and 4 teaching assistants or parents. It is recommended that teachers use instruments with a wide range of strengths and weaknesses, such as the piano, as teaching aids, and that children use small Orff instruments, such as sand hammers, triangles, tambourines, sandbags, and other safer props. One instrument per hand, without uniform specifications, can be exchanged for use in different music and rhythmic accompaniment, increasing the children's sense of freshness and arousing curiosity. The teaching site should be flat and spacious, providing enough space for activities.

Ask the children to sit in a circle with the teaching assistant helping them behind them to ensure that each child can see each other. As children with special needs may have different receptive and responsive speeds, it is recommended that no more than two pieces are chosen for the whole lesson to avoid confusing movements. Each piece is introduced by listening, and all are asked to make movements when playing slowly, such as crossing their arms and touching their shoulders to the long notes, and clapping their hands at the same time as the short notes. After repeating the piece two or three times observe if the students can complete the movement, if 80% of the members can adapt to it, the difficulty can be gradually increased to change the instructions, such as rattling the instrument instead of clapping, or stomping and clapping at the same time in response to the rhythmic point, or standing up to complete the movement. Teachers need to observe the state of the experiencers, increasing speed means increasing difficulty, if there are children who can't finish, they need to improvise to slow down the speed, or deliberately play the rhythm point into the accent, if the effect is still not good, they can add verbal instructions, for example, "clap, da, da, da," "up, up, down," etc., the assistant present at the scene can be used to change the instructions. If the result is still unsatisfactory, verbal instructions can be added, such as "clap, da, da, da," "up, up, down", etc., and the teaching assistant present should assist the child in making the correct movements, so as to experience the feeling of the music beat matching the movements.

Secondly, the audience for the experience should be as diverse as possible so that the positive effects of music are widely received. In addition to autistic children, parents of children are also experiencers of somatic rhythms and music therapy, therapeutic objects, researchers, and sometimes even teachers and therapists themselves. The demands of their role are more flexible depending on the individuality of the child. This is often the case in Somatic Rhythmic Classes in Switzerland: those who dare to improvise, to imagine musical images, to roll around on the floor, to run and jump in an uncontrolled manner, are often parents and first-time visitors who have not been systematically trained and have no general knowledge of music. Parents of children with special needs are relieved of stress by listening to and moving to the music, and at the same time are more cooperative and attentive to their children, which better guides their children to respond positively to the music, promotes their children's ability to interact with each other, improves relationships among family members, and, more importantly, secures more opportunities for the children and themselves to practice training together. Parental involvement in music intervention mechanism can explore more rehabilitation possibilities, which is also in line with the "home-school co-education", which is a new national advocacy for the development of young people with disabilities [11].

The practical steps are as follows:

The first step is to develop training objectives, taking the development of social skills and arm movement as an example. The second step is to formulate the training requirements, invite parents to sit opposite to the child, parents put the small sandbag into the child's hand, encourage the child to pass back the small sandbag in the same way, the music will start the action starts, the fixed phrase melody indicates the delivery and acceptance. The third step is to set the level of difficulty. Beginner: the sandbag is put directly into the child's hand, the child catches it, and the music is a downbeat melody that is simple and clear. Advanced: the parent holds the bag out to the child and encourages him or her to reach out and catch it; the music is an upward breaking chord that mimics the tone "May I?". The music is in upward broken chords, mimicking the intonation "Can I?". Advanced: the parent reaches for the bag and asks for it back, the music is played in a rising chord that mimics the question "Can I have it?" The melody is played, the child takes the initiative to hand the bag to the parent, the parent gives a positive expression of "thank you", the music chooses a harmonic chord to indicate the end.

Finally, there is no "international" standard for the assessment of music therapy, as there is for the assessment of body movement. This is because the content, focus, and criteria of assessment vary according to the individual differences of the therapeutic client and the therapist's professional background, clinical experience, and so on. Assessment is done by setting short-term and long-term goals and plans. Programmes are set up according to the characteristics of the person being assessed. Therefore, the Body Rhythm team has an "open source" record book to record the characteristics of the assessment subjects of different levels and ages and their reactions after each activity experience. After a subtle summary and accumulation of small steps, the assessment form is finally "customised" for each child. This "personalised" form allows for the observation of the time spent in physical movement or music therapy, and the assessment of certain abilities, such as speech, motor skills, co-ordination, etc. The form also includes a score for each of the components. Scores are assigned to each component of the assessment, and a summary of the stage of the programme is used to see how the scores have changed to determine whether or not the rhythmic movement sessions or music therapy have improved the child's symptoms.

The practice is as follows: 3 months as a total cycle, according to the stage is divided into the initial, middle and final assessment, each record contains concentration, hearing, reaction and other items, according to certain scoring criteria, the children's performance will be scored, so as to observe the results of the improvement of the experience of the control of the somatic rhythmic improvement of the results of the person [12].

Purpose and role of teaching sessions in a lesson		
Introduction Guided Listening (approximately 2 minutes)	Two children's songs were chosen as the musical melody and played separately	Music instead of words to get attention and to prepare the body
Part 1 Rapid Response (about 10 minutes)	Play the melody at slow speed and play a strong beat, when changing to medium speed, pay attention to the sense of phrasing	Use melody to greet peers, move hands and feet, anticipate beat and pitch, emphasise rhythm to elicit auditory, tactile and visual attention
Part 2 Learn the moves (about 10 minutes)	Perform original children's songs, switching speeds according to the experience's movement proficiency	Clap your hands/shoulders at the point of clapping, switching speeds once or twice to keep things fresh and prompt a change in muscle movement
Part 3 Free Movement (approximately 6 minutes)	Non-stop children's songs and improvisation music, switching volume and tempo in an orderly manner	Running, jumping, walking and other movements make the body curl, rotate and stretch For muscle control, relaxation
Ending. Stabilisation. (approximately 2 minutes)	Play two children's songs to return to the speed of the introductory session	Feel the music, relax your muscles, rest your body and brain

Duration of training: 10-16 sessions

Training Objectives:

- (1) Awaken excitement and increase leg control
- (2) Humming or completing standing or sitting independently to gain a sense of achievement

Training steps:

- (1) Teachers and children together to do "stand" and "sit" two sets of movements
- (2) The teacher plays the children's song "Little Star" and the children listen to it.
- (3) Children sit and listen when the music starts; children stand when the music stops.

Results: Initially the children were unable to perform the movements while listening to the music, but with the help of the teacher they were able to complete the movements gradually, but their response was slow. With continuous guidance, the children formed muscle habits and memories, and were able to respond to the instructions of the music, and their reaction speed gradually increased, from which they gained a sense of achievement and improved their self-confidence, and were able to move on to the next stage of learning.

Obtain an initial assessment form based on the scoring criteria:

Rhythmic assessment											
Name:		Degree:			Recorder:						
point	Test items	Number of	1	2	3	4	5	6	7	8	First and last assessment difference scores
at first period	concentration		0	0	1.2	1.5	1.4	1.6	1.7	1.7	+1.7
	audiological response		0	0	1.3	0	1.2	1.7	1.9	1.8	+1.8
	free response		0	0	1.2	1.3	2.0	2.6	2.7	3	+3

Completion of assessments based on discrepancy scores

marking scheme	
value of a score	instructions
0	Inability to perform actions as required
1-1.9	Needs teacher assistance to complete movements
2-2.9	Teacher verbally prompts to complete actions and instructions
3	Able to perform actions and instructions independently as required

Nowadays, there are about 200 schools around the world that have opened music therapy majors, and 13 colleges and universities in China have opened music therapy majors [13], and the country is still facing the situation of mixed qualifications of music therapists and trainers, and there is a great demand for music therapists with clinical experience. Music physical rhythm game, after the research and trial of professional colleges and universities, in the practice of verification enriches the learning method of children with autism, in the physical and mental health of the development of the basis of the experience of rehabilitation intervention; rhythmic teaching as a means of music professional teachers can make up for the shortage of professional music therapists in the classroom of children with special needs can not carry out the status quo of the experience of music activities.

ACKNOWLEDGEMENTS

Project: Project initiated by the Sichuan Special Education Development Research Center of Leshan Normal University, a key research base for Project: Project initiated by the Sichuan Special Education Development Research Center of Leshan Normal University, a key research base for humanities and social sciences in higher education institutions in Sichuan Province. **Project name:** Research on the assessment of body rhythm of special Project name: Research on the assessment of body rhythm of special children, **Number:** SCTJ-2021-D-17

REFERENCES

- [1] Ministry of Education. National Development and Reform Commission. Ministry of Civil Affairs . Ministry of Finance. Ministry of Human Resources and Social Security. Ministry of Human Resources and Social Security. China Disabled Persons' Federation (中国残联) Action Plan for Upgrading the Development of Special Education in the 14th Five-Year Plan, Guo Ban Fa (国办发) [2021] No. 60, 25 January 2022.
- [2] Chen Rong. From Auditory to Visual and Motor Perception - The Connotation and Significance of Dalcroze's Teaching System [D]. Shanghai:Shanghai Conservatory of Music,2008.
- [3] Gao T. Basic Theory of Music Therapy [M]. Beijing: World Book Publishing Company, 2020.
- [4] [10] Gao Tian. Introduction to music therapy [M]. Beijing: World Book Publishing Company, 2008.

- [5] Emile Jaques-Dalcroze, *The Eurhythmics of Jaques-Dalcroze*. [M]. Wildside Press, LLC, 2007
- [6] Fu Zhenfeng, Tong He. Analysis of the Application of Dalcroze Teaching Methods [J]. *Art Review*, 2021(9): 116-118
- [7] Zhang Jianping. Dalcroze Body Rhythm and New Curriculum Reform[J]. *Chinese Music Education*, 2004(9): 22-23
- [8] Zhang Xiaomin. New Progress in Chinese Music Therapy Research - Review of the 12th Academic Exchange Conference of the Chinese Music Therapy Society [J]. *People's Music*, 2016(6):59-61
- [9] Zhang HT, Zou HM. A case study of therapeutic musical instrument playing on fine motor intervention of upper limb in children with cerebral palsy[J]. *China Special Education*, 2021(10):52-58
- [10] Luo SX, Huang HY, Zhao GL et al. Medical-educational integration and home-school co-education help special academics grow up healthily--Taking Dezhou special education school as an example[J]. *Second Classroom*, 2020(2):40-42
- [11] LIN Mingying, SONG Haoyang. Rehabilitation training and effect evaluation of physical rhythm in children with mental retardation[J]. *China Ethnic Expo*, 2021(3):142-146.
- [12] Zhang Y, Yu YY, Yu J et al. Research progress of music therapy intervention in the rehabilitation of children with autism[J]. *Chinese Journal of Rehabilitation Medicine*, 2020(12):1517-1521
- [13] Jo Sales, *Music therapy and one-person story drama therapy for children with special needs* [M]. Beijing: China Light Industry Press, 2020
- [14] Hao Li. Focus on the development of international music therapy of Rudolf Robbins music therapy[J]. *Musical Instrument*, 2011(3):13-15

Author Profile

Yuchi Zhang, female, (1987-), Chengdu, Sichuan, Music College of Sichuan Normal University, Master's Degree, Lecturer, full-time teacher, Engaged in Art Direction, Piano Performance, Music Therapy and Special Education Research.