



# Modern Music Therapy and its Applications

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## ABSTRACT

Music has now been proved to have not only the role of artistic performance but also therapeutic effect; it has been applied to clinical treatments, psychotherapy, spiritual healing, etc. This article tends to review the development history of modern music therapy and also supplements the development of Chinese traditional music therapy through chronologically order to give readers a deep and broad understanding of music therapy. Besides, this article also summarizes music therapy's modern applications through the review of previous scholars' researches to give readers a clear and simple understanding of music therapy.

**Keywords:** Music therapy; Development history; Applications; Therapeutic effect; Auxiliary means

## INTRODUCTION

### Definition of music therapy

The earliest study on modern music therapy appeared in 1789, it was a study titled "music physically considered, which pointed out that music can access to the emotions, and could benefits to both mental and physical health. Thus, therapists gradually use music for healing. Which led music therapy entered a long road of development [1].

Due to the differences in culture and cogitation, music therapy genres are different; in this case, there is no universal scientific definition of it. However, the American Music Therapy Association (AMTA) has given a brief explanation of music therapy, it is defined as "clinical and evidence based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program [2]." While, Zhang Hongyi, the founder of music therapy in China, defines music therapy as a new frontier discipline, based on the theory and methodology of psychotherapy, and uses its unique physiological and psychological effect of music on human. With the participation of music therapists, various specifically designed musical performance and behaviors are used, those can eliminate listener's psychological barriers, restore and promote their physical and mental health [3]. In brief, music therapy

mainly follows the principles of psychotherapy, using music activities to treat patients and achieve healthy goals. However, it is better to apply music as an auxiliary means to improve the patient's emotion and behaviors rather than replace the main treatment

### Historical development of music therapy

**The history of music therapy:** The use of sound and music by humanity can be traced back to primitive society. The wizards at this period were accustomed to used sound and music as a healing ritual to achieve exorcism and healing. After that, the ancient Greeks (800-146 BCE) were considered the pioneers of music therapy; they began to focus on the psychological effects of music on humans. Pythagoras, plato, and aristotle are considered pioneers who provided the theory of music therapy [4]. Pythagoras (580-500 BCE) emphasized that using harmonious music can regulate and adjust human's physical and mental disorders. Aristotle (384-322 BCE) pointed out the "Iso-principle" of music therapy, that is, music expresses a specific emotion that can make people produce the same emotion. Plato (427-347 BCE) believed that the imbalance of body and mind could cause human diseases, while, music could be used as a tool to balance them [5,6]. These three pioneers all mentioned that music could impact on human psychology and regulate human behaviours, consciousness, and emotions.

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## LITERATURE REVIEW

In the rapid development of medicine during the Renaissance (14<sup>th</sup>-17<sup>th</sup> century), music began to combine with medicine to treat mental diseases [7]. From the 18<sup>th</sup>-19<sup>th</sup> centuries, a large number of scientific studies researched the application of music in the field of psychology were emerged, which marked the birth of modern music therapy [8]. The second world war brought an opportunity for the rapid development of music therapy. Many countries, especially the United States, focused on better rehabilitation for veterans, so many musicians and music teachers joined the team of medical staff. This case led many professional music therapy courses and related organizations emerged to make up their knowledge gaps of these musicologists and music teachers in medicine and psychology areas [9].

In 1998, the United States officially established the American Music Therapy Association (AMTA), which is an organization specializing in music therapy. American Music Therapy Association (AMTA) is a reunification of the National Association for Music Therapy (NAMT) established in 1950 (which was served as a primary professional association for music therapists in the United States), and the American Association of Music Therapy (AAMT) established in 1971. Till the present, there are more than 200 countries in the world have set up music therapy associations; the world congress of music therapy is held every two years for academic exchanges.

### The history of Chinese traditional music therapy

In addition to the word known modern music therapy nowadays, China also has her own development of traditional music therapy. The emperor's inner canon, around 227 BCE, was the earliest existing medical classic in China, it first introduced five tones into the medical field. Gong, Shang, Jue, Zhi, Yu is the name of the five different tones in the Chinese traditional pentatonic scale, which similar to 1, 2, 3, 5, and 6 in the current numbered musical notation. That is, the Gong is equal to 1 (Do), the Shang is equal to 2 (Re), the Jue is equal to 3 (Mi), the Zhi is equal to 5 (Sol), and the Yu is equal to 6 (La). In the context, the ancients combined the five tones (Gong, Shang, Jue, Zhi, Yu) with the five organs (liver, heart, spleen, lung, kidney) and five emotions (anger, joy, worry, sorrow, fear) together by five elements theory of Chinese traditional medicine, pointed out the different tone can influence the different organ and resulted in different emotion. The five elements of Chinese traditional medicine is the application of the five elements theory in traditional Chinese medicine, it discusses and deduces the mutual generation and mutual overcoming between cosmic cycles to internal organs, meridians, physiological functions and properties of medicinal drugs, etc. The five elements are wood (mu), fire (huo), earth (tu), metal (jin), and water (shui). This theory is regarded as the theoretical basis of Chinese traditional music therapy.

The medical experts continued to develop the therapeutic effect of music in practices; it can be seen in the historical classics from each dynasty. Bai hu tong·li yue (221 BCE) pointed out that "balance and harmonize five tones can nourish every part of the body" [10]. In Shi ji·le shu (104 BCE), it said music is

something that can be used as a method to move the blood and lift the spirit, thus to peace the emotions [11]. These ancient texts proved that people have discovered the benefit of music in humans' qi and blood at that time.

In Tang and Song dynasty (618-907 CE, 960-1279 CE), the clinical use of music was recorded in poems. The poet Bai Juyi (Tang dynasty, 772-846 CE) wrote in his poem Hao ting qin as:

I like the sound of si tong (a kind of instrument), as long as I heard the sound of si tong, it clears my mind. There is no trouble disturbs me. The melodious and peaceful sound can relieve my pain and cultivate the soul and spirit [12].

This poem emphasized that music can remove sorrow and worries; it can peace humans mind and regulate human emotions. The famous poet Ouyang Xiu agreed with music's healing power. His Song yang zhi xu said

I once overworked and got depression, I tried not to work and looking for a doctor, but I did not heal by the medicine. Later, my friend Sun Daozi taught me to teach Qin (a kind of instrument). I learned five tones and a few pieces of music; I gradually felt happy and no longer depressed.

## DISCUSSION

This text mentioned that Ouyang Xiu once was suffered from overload work and got some mental stress; however, the usual treatment could not solve his problems, while his friend suggested and taught him playing the Qin, in the long time of music learning, he finally felt happy and no longer depressed. These ancient texts described music played an essential role in healing mental illness and was recognized by people at those periods. During the Jin dynasty (115-1314 CE), a famous doctor called Zhang Zihé (1151-1231 CE) was well known in using music to cure diseases, he recorded in Ru men shi qin (1228 CE) as:

In treating patients suffering from excessive grief and chest tightness, the acupuncture and drug treatment combined with music and dance could increase the efficacy. He also advocated patients to learn instruments in order to alleviate the pain caused by diseases [13].

During the Ming and Qing dynasties (1368-1644 CE, 1644-1911), music therapy was further praised. Zhang Jingyue (1563-1640 CE), an outstanding medical scientist in the Ming dynasty, proposed in the Lei jing fu yi (1624 CE) that music can play a role in health and rehabilitation through mind [14]. Wu Shiji (1806-1886 CE), a famous doctor in the Qing dynasty, praised music in his book Li lun pian wen (1880 CE) as "the illness caused by emotions can be solved by appreciating flowers and music", which was more effective than taking medication [15]. He believed that music was beneficial to mental and physical health. Meanwhile, it was conducive to the disease recovery.

The modern music therapy in China started late. In 1979, Professor Liu Bangrui, a music therapy doctor from the United States, was invited to give lectures in Beijing at the central conservatory of music. Liu is the person who first brings

modern music therapy from European and American countries to China. From then on, modern music therapy began to popularize in clinical treatment, combined with psychotherapy and acupuncture to improve the therapeutic effect. In 1989, China established the China Music Therapy Association (CMTA), which greatly promoted the music therapy industry in China [16].

### The mechanism of modern music therapy

Music achieves its unique healing effects through the following three aspects [17].

**Physical effects:** The biological activity of the human body has a rhythm. Cells are the basic units that constitute our body and they are always vibrating. Music can be acts as a sound wave when it introduced into the body. The synchronous and harmonious resonance will occur when music or sound's frequency, rhythm, intensity, etc. are consistent with the human body's vibration frequency and rhythm. Thereby have a comprehensive medical effect such as sedation, analgesia, and blood pressure reduction; together with the adjustment human biological rhythms to normal, such as pulse, blood pressure, blood sugar, heart rate, and gastrointestinal peristalsis, etc.; it can also harmonize the functions of various systems and tissues, and ultimately achieve the effect of promoting disease recovery [18].

**Psychological effects:** Music can affect people's emotional activities. People can get different emotional feelings from listening to different styles of music. Just as Aristotle's "Iso-principle", some music makes people relax and peace, some music makes people sad, different music gives people different emotions.

**Physiological effects:** Music acts on both hemispheres of the brain, with activities in the right hemisphere dominating. After those beautiful melodious, brisk and bright music introduced into the brain, it acts on the limbic system and brainstem reticulum system; promotes the secretion of neurotransmitters through neuro regulation and body fluid regulation. Therefore, adjusts the body's homeostasis, restore physiological balance, and strengthen the body's immunity.

### The application of modern music therapy

**Music therapy can be used in psychotherapy:** Music therapy is used in psychotherapy; it can help to relieve the negative emotions and increase positive emotions. Many studies were conducted in the area of psychotherapy.

#### Anxiety

Barrera, et al. did a preliminary study to evaluate the effective of interactive music therapy on the reduction of anxiety in hospitalized children with cancer [19]. The researchers conducted a pre and post music therapy comparative study on 65 children as well as their parents. Using a schematic face to rate children's mood, child's play performance rating from their parents, and satisfaction questionnaire from all the children, parents, and staff. The result showed that the children's ratings

of their mood were significant improved after the treatment. Qualitative analyses of comments from the participants suggested that music interaction resulted in a positive effect on children's well-being. Haun, et al. conducted an investigation to analyse whether music played an effective role in reducing the state anxiety of 20 patients awaiting breast biopsy. They divided participants into two units; the experimental group was intervened with music for 20 minutes before the operation, whereas only general preoperative care was conducted to the control group. Outcome variables were all participants' blood pressure, heart rate, and respiration; State Trait Anxiety Inventory (STAI) for all participants was scored. At the endpoint, all indicators and STAI were re examined. The results showed that music could lower the state anxiety as well as respiratory rates of the patients [20].

#### Depression

Conducted a study on patients with major depressive disorder with music intervenes, in which, researchers divided depressed patients into three groups: 1) Active group music therapy and 2) Receptive group music therapy and 3) Counselling group. Depressive scores were rated using the Montgomery Asberg depression rating scale; meanwhile, self-rated depression score and quality of life were conducted [21]. The outcomes indicated that both groups intervened with music showed a positive effect on treatment compared with counseling group. Im and Lee launched a study on 29 aged people with depression and cognitive impairment. The music activities included playing of rhythm instruments, tone chime playing, Ching Ching song chanting, and playing of recreated music pieces, etc. After three months of intervention, they found that the depression scores for the elders were statistically significantly lower than those without music intervene, while the cognitive abilities results were not significantly improved, but they also found that cognitive abilities are closely related to the depressed elderly's depression symptoms, which concluded the result that music can be an effective intervention in improving depression symptoms, as well as in preventing and delaying cognitive impairment.

### Music therapy used in the medical field

**Application on surgery and analgesic effect:** Music has been used in surgery to reduce the anxiety of patients. Apart from that, adding music interventions to postoperative rehabilitation can have an analgesic effect, which helps patients get a better recovery. Palmer, lane, and May, conducted research on music therapy's impact on reducing surgery related anxiety in patients with breast cancer. With and without music intervene before and during the operation were performed. It turned out that music can significantly reduce the pre surgery anxiety, patients could feel the power of support from the song, and the operation went smoothly. Conducted a study with 182 postoperative patients. These participants were randomly divided into: Music intervention group (M), Music combined with Therapeutic Suggestions group (M/TS), and a control group (without music and therapeutic suggestions). They standardized the surgical technique, anaesthesia, and

postoperative analgesia. With regard to analgesia, morphine was used for all participants. Outcome variables included nausea, fatigue, well being, anxiety, headache, urinary problems, and heart rate were measured as. The study demonstrated that both M and M/TS groups during the postoperative period could significantly reduce fatigue, nausea, vomiting, and pain.

### Application on illness recovery

Canga, et al. researched the effect of psychotherapy combined with music on chronic obstructive pulmonary disease and other lung diseases as adjunct to pulmonary rehabilitation. Researchers divided the participants into experimental group (applied with both conventional lung disease treatment and music therapy) and control group (applied conventional lung disease treatment only). The music interventions, provided weekly, including music visualization, wind playing, and singing. The results showed that music therapy combined with conventional lung disease treatment could become an effective way to treat chronic lung disease.

### Application on childbirth

Browning launched research on the study of using music as a coping strategy during labour. Eleven women were recruited as participants and volunteered to participate in a music therapy exercise during their pregnancy. They were randomly divided into two groups: music therapy combined with labour support and labour support only. Every woman in music therapy combined with labour support group selected their preferred music and listened to it daily, they were also received instruction when listening. After their baby birth within 72 hours, these eleven women were interviewed about their feeling feedback of those two copying strategies. It turned out that music therapy could significantly relieve pain and tension during prenatal and delivery.

## CONCLUSION

Music therapy, a new frontier discipline, is increasingly used in psychology, maternity delivery, postoperative, analgesia, rehabilitation, and other fields. The therapeutic effect is mainly focused on improving mental state, clinical symptoms, and simple life index. It still has a long way in clinical research. Simultaneously, due to the difference of regions having different cultural characteristics, whether Chinese classical music and traditional music therapy theory can be applied to the other regions of the world remains approved. Regardless, music therapy provides a new auxiliary treatment method to the world's medical industry.

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