Application and Innovation of Multimedia Information Technology in the Arrangement of Aerobics Music

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Abstract. Aerobics is a body exercise combining gymnastics, dance and music. In aerobics training and competitions, music runs through. Based on multimedia information technology, this article introduces the software and hardware of aerobics computer music production, aerobics music arrangement steps and operation methods, and provides a certain reference for aerobics music production and research.

Keywords: Aerobics, Multimedia Technology, Audio Editing, Effector

1. Introduction
Calisthenics is a sports program that started in the western countries in the early 1980s, centered on fitness, and aimed at shaping a healthy body and bodybuilding [1-2]. Under the accompaniment of music, through the perfect connection of certain difficulty actions, the athletes' continuous performance ability is demonstrated [3-4]. Aerobics is a body practice that combines gymnastics, dance, rhythmic gymnastics, and modern dance with bright and rhythmic music accompaniment. The movements are cheerful, lively, strong rhythm, full of vitality, and it is easy to arouse people's interest and make the practitioners passionate.

Aerobics music production mainly includes pre-production and post-digital audio correction. One of the characteristics of computer music is the digital processing of sound. The digital sound processing greatly improves the fidelity of sound effects, enriches the expressive power of music, and makes music. There is an unprecedented huge leap in the performance of sound quality and music construction ability [5-6]. This article relies on multimedia information technology to introduce the software and hardware environment of aerobics computer music production, the corresponding production steps and operation methods, and provides a certain reference for aerobics music production and research.

2. The value of aerobics
Aerobics has the essential characteristics of the integration of fitness, bodybuilding, and health, with the variability and coordination of movements, as well as a distinct sense of rhythm and rhythm, and its exercise load is highly targeted. Engaged in aerobics exercises for a long time can exercise the body, promote health, shape beautiful body and cultivate sentiment.

Regular aerobics exercises can exercise the heart, increase the elasticity of blood vessels, increase the capacity of the heart, increase the contraction strength of the heart and the tension of the blood...
vessels, enhance the cardiovascular function of the human body, and improve the body's activity ability. When the exercise time is longer and the amount of activity increases, the oxygen demand will also increase, which requires that the respiratory muscles contract more vigorously, meet the needs of the body's gas exchange, and improve the function of the respiratory system. Muscle activity can enhance gastrointestinal motility, help digestion and absorption, and enhance the function of the digestive system. Persisting in aerobics exercises for many years can continuously improve and improve various functions of the human body and achieve better fitness effects.

3. Get music material
There are three main elements of music: they are rhythm, melody and harmony, but the dominant element of music is melody. The basic elements that make up a melody are the melody line (pitch), mode, rhythm, etc. If you break away from the rhythm, you can't form a melody, but the rhythm can exist alone without the melody. For example, various percussion instruments without a fixed pitch can play a rhythm of different emotions. So rhythm can appear as a separate art form. What is rhythm? There are always two very important relationships that make up rhythm: one is time and the other is force. Rhythm is the alternating and contrasting relationship between various time-valued sounds (that is, different long and short sounds-time relationship) and various strength sounds (strong and short sounds-force relationship). What we usually call the sense of rhythm is actually how people feel the length and strength of sound in music. It has its own rhythm in different musical works. Of course, we can't ignore the function of beat (also called tempo) at the same time, it is a means to measure rhythm. With it, we can count or hit the beats in the beat, to further help us deepen our understanding of the rhythm in the music. If the rhythm is the "skeleton" of the melody, the beat is the "pulse" of the melody. Different beats form different types of strong and weak relationships, appearing regularly in the melody, giving people the enjoyment of beauty. Only when the rhythm is organized in accordance with the rhythm (such as two beats and three beats) organized by it, it has distinctive characteristics and clear meaning.

In terms of speed, competitive aerobics requires a music speed above 26 beats / 10s, and fitness aerobics between 22-25 beats / 10s. The speed of the music will directly affect the speed of the athlete's movement. In comparison, fast-paced music is easier to increase the activity of a set of actions, and it is also easier to resonate with the audience. But the faster the music, the better. Too fast music speed exceeds the rhythm speed of the action itself, and exceeds the athlete's technical level and action ability, which will make it difficult for the athlete to complete his movements according to the due music beat in the too fast music, thus destroying the action The relationship between the rhythm and the music rhythm may often appear as if the rhythm of the music is matched, and the original amplitude of the action cannot be fully made, which also destroys the original rhythm of the action, resulting in an uncoordinated movement. Or even failure.

At present, in the selection of music for aerobics abroad, the number of music with songs is relatively reduced. During the practice of aerobics, we feel that the use of pure music is easier to understand than music with songs in foreign languages (mainly English), because there are many

Many foreign language lyrics content is sometimes not understood by practitioners, and can only be

felt based on the emotional changes of the music. In this way, it may be inaccurate, and the movement may not match the overall music during the arrangement, but this It's not that music with songs can't be used, as long as we notice this problem, it will also be used very well. It is also possible to use

Chinese songs. The lyrics of Chinese songs can be understood by both practitioners and audiences, especially a song that is very familiar to popular practitioners and audiences, and it is more likely to resonate, which is useful for improving aerobics. The overall effect has a very important effect.

Most popular mainstream computers on the market now can meet the optional requirements. The system standard requirement of the software is 2.4GHz, the system is Microsoft Windows 10, 4GB RAM or higher configuration, 1920 * 1080 color display, stereo sound card, suitable for making audio CD CD-RW drive. Microsoft Direct X 11 software required for video import. In addition, the additional requirements for the multi-channel encoder must be Windows 10 for the multi-channel
WMA import system. For surround pre-listening, you must install: DirectX 11 and multi-channel sound card and Direct Sound driver.

The key technique of aerobics is to form an overall concept. Before compiling music, first determine the overall structure of the aerobics music arrangement, determine the music's preferred style, specific melody, number of tracks, beat; collect the files needed in the music, pay attention to the connection and cooperation between the files.

3.1. Record song
Recording songs is a way to obtain material. The method of recording songs in Adobe Audition CS6 software is very simple:

The first step: First use CS6 software, select the "File" command, click the secondary menu "New Project", select the appropriate sampling resolution (the higher the sampling rate, the better the sound quality, but the more files you get Big), stereo, and finally form a new project.

Step 2: Import the originally planned music: select "File" in the first level menu, then "Import File" in the second level menu, then select the dialog interface for import, and select one or more music files to be imported in due course Perform the import operation. Note that the music accompaniment file can be in the format of other music files such as MP3, WAV or MTV.

Switch to the "Multitrack View" state, drag the newly imported file in the file panel to "Audio Track 1", and drag the mouse to align the left border of the file's waveform with the "Audio Track 1" waveform editing track.

Step 3: Make sure that the microphone is properly connected to the computer before recording, first select "Options" in the first-level menu, on this basis, select the software mixing console operation button, that is, the "recording control" command window appears, the main purpose It is to record your own voice according to the size of your voice. First, you need to turn off the microphone in a closed environment. If you open the speaker to record songs, then the mixed sound of music and vocals is recorded.

3.2. Record sound files from computer
This operation can record any sound from the computer. This sound can include the video played, the recorded video sound, and the original sound of the computer itself. The recording method is basically the same as the above steps for recording songs.

Play the sound file to be recorded (the file can be directly opened in the operating system without importing the project), and then click the record button on an audio track of Audition to start recording.

In order to ensure that the recorded sound size is appropriate, you should click the "level signal-monitor input level" command in the "Options" menu; at the same time adjust the position of each slider such as volume, waveform, etc., so that the highest recorded sound is at " When the position in the "Master Control Level" panel is displayed between -4 and -2, the best sound effect can be obtained.

4. Audio editing
After obtaining the material through different channels, the next step is to edit the waveform.

First, open the audio operation interface, select the first-level menu "Edit" (as shown in Figure 1), second, you can select the corresponding waveform, use the left mouse button to perform a series of operations to determine the appropriate waveform; the second method is Directly select the "Selection / View" menu to set the start position, end position of the waveform, or the corresponding waveform according to the audio.

The multimedia software system provides a series of window panels, such as the Windows window cut panel that can be copied and pasted; at the same time, on the other hand, you can also set the cut in the secondary menu "Edit" under the first menu "Cutting board" command to select.
Because the music arrangement of aerobics is often stereo, if you need to edit the left and right channels of the stereo, you need to separate it first. You can use the existing functions of the software to distinguish it. When the command to separate the left and right channels appears, both can be selected and edited separately.

For the editing of different categories of music, different data can be processed:

1) Boolean Type

\( U_i \) represents the \( i \)-th element in \( U \), which represents \( i \in 1, 2, 3, \ldots, n \). \( A_j \) represents the \( j \)-th element in \( U \), \( j = 1, 2, 3, \ldots, n \).

\[ \mu A(Sij) = N(\alpha jk) / n, k = 1, 2, \ldots, n \]  \hspace{1cm} (1)

Where \( n \) represents the data number.

2) Value Type

It is assumed that \( l \) represents the number of classes of attributes, \( C_i \) represents the first class, \( N(Cl) \) represents the number of attributes in \( C_i \), \( C_i \) represents the \( i \)-th attribute value in class \( l \), and the membership function of the attribute value represents shown in equation (2):

\[ \mu_A(C^{(l)}_i) = N(C_i) / n, l = 1, 2, 3, \ldots, i = 1, 2, 3, \ldots \]  \hspace{1cm} (2)

3) Class Attribute

\[ \mu_A(C^{(l)}_i) = N(C_i) / n, l = 1, 2, 3, \ldots, i = 1, 2, 3, \ldots \]  \hspace{1cm} (3)

Among them, the definition of the class attribute is consistent with the definition symbol of the numeric type.
When selecting music, you can use slow tones as the beginning or end, which can more fully express the speed and strength of the Allegro music. When used at the end, it can give people a feeling of relaxation and tranquility to compare with the front clapper. Choosing folk music is also a good way, but you must pay attention to the atmosphere and effect of the music itself, and also pay attention to the coordination of movement and music style in the arrangement.

5. Conclusion
In the actual music creation, teachers are most puzzled by music editing, including music synthesis, beat strength control, noise removal, and excessive audio level. With the popularization of home computers, the use of computers as the center in music production, the use of multimedia input and output devices such as keyboards and microphones, and the intelligent and simplified operation of various audio software have promoted the progress of music production technology and reduced professionalism. The threshold of music production. Producers can fully embody their own music concepts and achieve satisfactory music effects by editing, adding effects, and synthesizing existing music materials without requiring much music theory knowledge.

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