TANG [HUMANITAS MEDICINE]

Review Article

Weight loss effect through traditional Korean instruments

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ABSTRACT

Most modern adults are overweight or obese. Health services are troubling to overcome the large number of individuals in need of weight loss. Music therapy is emerging as a new option. Among various music therapy methods, it studied various treatments through Korean traditional music, and it is thought that Korean traditional music is a good therapy for diet. The present review focused on find the most useful condition for weight control by using Korean traditional music. National Center for Korean Traditional Performing Arts measured the dB of Korean traditional music, In the next, listen to other dB's music while eating and compared energy intake, water intake, duration of meals, number of servings, number of bites, eating rate (bites per minute), and bite size (grams). As a result of the exhibits, differences in food intake were also found in the difference of dB. 60 dB of music showed a decrease in energy intake. It suggests that Korean traditional music belonging to 60 dB brings weight loss effect. As a result, the effect of weight loss is shown by use Korean traditional music. However, future studies should be performed to reduce the energy intake by increasing the exposure period to Korean traditional music

Keywords: Korean traditional instruments, weight loss effect

INTRODUCTION

Most modern adults are overweight or obese, health services are troubling to overcome the large number of individuals in need of weight loss (Flegal et al, 2008; Finucane et al, 2011; Adams et al, 2007; Bolen et al, 2012). However, while anti-obesity drugs are hard to prove approval from the Food and Drug Administration (Dvorak et al, 2010; Tasi and Wadden, 2005; Freedhoff et al, 2009). They are generally limited to severe obesity Music therapy is emerging as a new option. The concept of music as a cure is based on ancient cross-cultural beliefs that music can heal the mind and body.

Music therapy is evident in the historical writings of ancient civilizations like Rome, Greece, India, and Egypt, and in biblical Scriptures. Florence Nightingale used music therapy for injured soldiers during the Crimean War. In Veterans Administration hospitals, music was found to be an effective treatment for wounded veterans. Music therapy gradually became a multidisciplinary field involved in care of the sick and injured (Lockyer, 2004). In the current music therapy is being used for therapy in various places and research is being done in many places to find new music therapy methods (Donald et al, 2012). Among various music therapy methods, it studied various treatments through Korean traditional music, and it is thought that Korean traditional music is a good therapy for diet.

Throughout the Korean history, music played a significant role in the lives of Koreans. Music has used as a means of self-expression and enjoyment in social gatherings as well as a traditional healing tool for shamanistic rituals and therapeutic meditations. Since Korean traditional music contains the tradition and emotion of our nation's unique traditions, it brings a sense of primal and emotional state, which leads to unconscious comfort. In addition, various rhythm divisions and breaks in the Korean traditional music, the rhythm that comes from the climax, invite dynamism to those who play or listen to it. Percussion playing, which occupies a large part of Korean tradetional music, evokes catharsis, and the actions that accompany it also bring about dynamics. Because of these features, Korean traditional music helps relieve the stress of the people. The Korean traditional music has the advantage of easy to remember due to the progress of the monotonic sound and the progress of the horizontal scale, which is a characteristic of Korean traditional music (Kim, 2014).

It have a close relationship with the intake habits and calorie intake of diet foods. This review were conducted on the effects of Korean traditional music on food habits and calorie consumption. And it is the most effective instrument for diet by searching the characteristics and volume of the radiation of Korean traditional instruments. Similarly. The purpose of the review was to assume the effect of background Korean traditional music and its style, in particular, on energy intake, eating rate, and whether these changes are mediated by different appetite sensations.

MATERIALS AND METHODS

MEASURE KOREAN MUSICAL INSTRUMENTS

MEASURING WITH A VIBRATOR

Generally, a method of measuring a radiation pattern of a sound

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source is a method of measuring one or more microphones at each measurement point while the instrument is fixed, and a method of rotating the instrument while the microphone is fixed. In this measurement, a measurement microphone was installed at the sound reception position of three points, and the instrument was rotated in the horizontal and vertical direction according to the position of each sound. It selected the anechoic chamber of the New Media Communication Research Institute of Seoul National University and measured it by using the non - contact type exciter using the electromagnet developed in 2005. The string instruments measured by the exciter are 8 points for Jeongak Gayageum, 2 points for Sanjo Gayageum, 2 points for Geomungo and 2 points for Sanjo Aashuk. Two different producers were selected for each musical instrument, and the producer (producer) checked and selected the two most preferred producers of the National Center for Korean Traditional Performing Arts. Description of the measuring method using a vibrator is to amplify each sine wave generated by the signal generator of B & K through a high output audio amplifier, and then to flow it to an excitation device having a coil wound around the magnet. The purpose of this study is to study the radiation pattern of playing musical instruments rather than the radiation patterns of musical instruments themselves. In the transmission of sound, the human body may be said to affect as an obstacle. However, the radiation pattern required for the research of the Korean traditional music organizing method and the positioning of the microphone sounding should finally be the radiation pattern including the influence of the human body. In this respect, the measurement through performances of performers can be a good method for studying Korean traditional music. In addition, the performance of the performer is essential for measuring the volume of the instrument. In general, when measuring the volume of a musical instrument, it is possible to separately measure the change in the volume of each dynamic, that is, the volume at the time of small playing and the volume at the time of loud playing. In addition, the individual differences among the performers, which are regarded as disadvantages in the measurement through the performance of the performer, increase the number of measurement times and obtain average data among the performers.

MEASURING THROUGH PERFORMANCES

The study of the radiation pattern through performers' performances may not be an objective measurement method because the state of excitation may be different each time, depending on the difference of the player's condition and emotional state, It is objectified through measurement of demonstration. The acoustics scholar who studied radiation patterns of Western musical instruments in the past. Professor Juergen Meyer measured the performance of the performer, not the measurement through the instrument. A total of 64 musical instruments (including humanity) were measured by this performer. There are 31 instruments (4 Jeonggak Gayageum, 4 Sanjo Gayageum, 5 Geomungo, 4 Jeongak Ajaeng, 4 Sanjo Ajaeng, 5 Yanggeum, 5 Haegeum) 24 wind instruments (4 Jeongak Deagum, 4 Sangjo Deagum, 4 Dangpiri, 4 Hyangpiri, 4 Sepiri, 4 Danso) 4 percussion instruments (4 Janggu) and 5 Insung (2 male insung, 3 female insung).

A total of 36 performers participated in the measurement, including 23 members of the National Center for Korean Traditional Performing Arts, 8 creative musicians, and 5 folk musicians. The performance is based on the principle of playing with the instrument of the person who has been using it for more than one year. The musical instrument which is not just purchased is unfamiliar with the hand of the player, but the string is increased in the case of strings, it is not good to sound correctly (Lee, 2007).

STUDY PROTOCOL AND

The study had a randomized crossover design. Each volunteer attended in random order and at least 1 week apart, the control trial where no music was playing, different music trial. The music track was instrumental different music track and it received treatment to limit volume change during playback below 10 dB. All ordeal were actioned in pairs of volunteers; volunteers were physically together when eating and they were allowed to talk to each other; each pair stayed the same for all three trials.

On the day of the experiment, the volunteers could not eat anything other than water after breakfast. The volunteers arrived at the laboratory three hours after having a standard breakfast at home. Upon arrival, basic appetite was assessed as a 10-cm visual analog scale (VAS) of hunger, fullness / satiety, and desire to eat. The pair of participants moved to the dining area, where the specified music is already playing. After allowing 5 min to adapt to the surroundings, the VAS were administered again for completed, and consequently lunch was served. Lunch consisted of a familiar and widely accepted food for the participants Volunteers were instructed to consume all of the remaining food to eat and to calculate the amount of food served on their plates. The researchers measured the time it takes to swallow the last bite from the first bite, the number of bites for each volunteer to assess the rate of eating (Mamalaki et al, 2017).

RESULTS

The present review focused on measured the exact volume of Korean traditional instruments to know how the Korean traditional instruments affected weight loss. The measurement of the volume of all musical instruments was based on a paper from the National Center for Korean Traditional Performing Arts. The volume was measured on 15 kinds of musical instruments such as Jeonggak Gayageum, Sanjo Gayageum, Geomungo, Jeongak Ajaeng, Sanjo Ajaeng, Haegeum, Yanggeum, Jeongak Deagum, Sangjo Deagum, Hyangpiri, Dangpiri, Sepiri, Danso, Janggu, Insung. The measurement results were measured in four ways. Measures were made to play less, usually, louder, and played the actual music (Table 1).

The results of the measurements are split into three major parts. The Korean traditional instruments with measured values of 60 dB on the basis of the performance of music are Jeonggak Gayageum (65.8 dB), Sanjo Gayageum (66.9 dB), Jeongak Ajaeng (68.7 dB), Yanggeum (62.7 dB), Sepiri (64.5 dB) and Danso (67.9 dB). The Korean musical instruments with the measured value of were Geomungo (71.1 dB), Sanjo Ajaeng (72.1 dB), Haegeum (75.9 dB), Jeongak Deagum (76.8 dB), Hyangpiri (75.8 dB), and Insung (70.2 dB). Finally, Korean traditional instruments with measured values of more than 80dB are Sanjo Deagum (81.3dB), Dangpiri (80.2dB), and Janggu (86.7dB).

The highest measured value of dB was measured as Janggu at to 88.2 DB when the instrument was played loudly. On the contrary, the instrument measured with the smallest dB was yanggeum and measured at 56.5 dB when the instrument was measured play small. The measured dB for the other instruments

is shown in Table 1 (Lee, 2007).

Table 1. Study on radiation characteristics and volume of Korean traditional instruments (Lee, 2007)

instruments	less	normal	loud	Song performance
Jeonggak Gayageum	60.7	64.6	67.7	65.8
Sanjo Gayageum	60.6	64.7	67.8	66.9
Geomungo	62.5	66.9	71.5	71.1
Jeongak Ajaeng	70.7	72.6	77.2	68.7
Sanjo Ajaeng	68.3	72.4	75.6	72.1
Haegeum	71.5	75.3	79.1	75.9
Yanggeum	56.5	59.6	64.1	62.4
Jeongak Deagum	71.4	74.1	80.3	76.8
Sangjo Deagum	72.8	75.5	80.4	81.3
Hyangpiri	72.5	73.7	78.5	75.8
Dangpiri	75.1	75.2	80.5	80.2
Sepiri	61.8	63.1	68.2	64.5
Danso	67.2	69.3	71.7	67.9
Janggu	83.7	86.5	88.2	86.7
Insung	66.5	68.5	74.4	70.2

Table 2. Dietary intake and meal-related parameters (Nutritionist Pro ™ 2007, Axxya Systems, Texas, USA)

	Control trial	60 dB music trial	90 dB music trial	p
Energy consumed	1079 ± 330	1064 ± 324	1136 ± 311	0.697
Water	226 ± 163	239 ± 188	271 ± 154	0.602
Meal duration	11.3 ± 4.1	10.3 ± 4.8	10.2 ± 3.3	0.522
Number of servings	1.7 ± 0.6	1.6 ± 0.6	1.8 ± 0.6	0.418
Number of bites eaten	28.3 ± 9.9	27.7 ± 15.6	29.0 ± 13.4	0.939
Eating rate (bites per minute)	2.6 ± 0.8	2.8 ± 0.8	2.9 ± 0.8	0.410
Bite size (grams)	24.6 ± 7.0	25.8 ± 7.3	26.1 ± 8.6	0.799
How much did you like the food	7.8 ± 1.3	8.0 ± 1.6	7.7 ± 1.3	0.839
How much did you like the music	-	4.8 ± 2.6	5.1 ± 2.6	0.704
How much did you perceive the volume of the music	-	3.8 ± 1.5	8.0 ± 1.5	<0.001

THE EFFECT OF MUSIC ON FOOD INTAKE

The experimenter of the experiment entered under the same conditions. Energy consumed the previous day or energy consumption at breakfast. When data were analyzed individually for obese, overweight, the normal weight participants, there was no difference.

The present study shows a small difference in the number of meals served and Number of bites eaten. However, the food intake showed a lower food intake than the control trial (1079 ± 330 kcal) and the 60 dB music trial (1064 ± 324 kcal) compared to the 90 dB music trial (1136 ± 311 kcal). In addition, there was also a slight difference in the amount of drinking water. Participants who did not listen to music drank 226 ± 163 ml of water. Participants who eaten while listening to 60dB of music drank 239 ± 188 ml of water. The participants who drank the most were 90 dB participants who ate while listening to music (271 ± 154 ml) (Mamalaki et al, 2017)

DISSCUSION

In music therapy, each country should apply different socio-cultural characteristics and emotional differences caused by them. Recently, there is a tendency to apply the traditional musical elements to the treatment situation and seek the direction of treatment according to the emotion of each country. Traditional music provides the therapeutic force to eliminate the resistance and solve the problem for the people's internal confrontation by providing the primitive stimulus with the universal musical element of the country (Moreno et al, 1999). Music reflects the people and society, and it is important that Korean traditional music, which has been accompanied by our long history, is also the basis of our music activities and it is applied to the music therapy that is currently being performed. Because Korean music has been formed through the long history of Korean music, the Korean traditional music therapy is suitable for our emotions (Kim, 2014).

For the first time, to find the most useful condition for weight control by using Korean traditional music, it measured the dB of Korean traditional music. Korean traditional instruments have their own different dB. It was also measured at different dB values depending on how you play. The largest value was measured as 88.2 dB when the instrument was played large. On the other hand, the smallest value of 56.5 dB was measured. The measured dB for the other instruments is shown in Table 1. It also searched how music affects food intake by different dB. We measured energy intake, water intake, duration of meals, number of servings, number of bites, eating rate (bites per minute), and bite size (grams). As a result of the measurement, Participants eating at 90 dB of music (1136 ± 311 kcal) had more food intake than participants who did not listen to music (1079 ± 330 kcal) and participants who listened to 60 dB of music during the meal showed the lowest food intake (1064 ± 324 kcal). When listening to music in the high dB range, the overall food intake increased as well as energy intake as well as water intake. As the day progresses (de Castro et al, 2004b). On the other hand, when you listen to 60 dB of music, the amount of energy consumed is smaller than when you do not listen to music. Therefore, the most effective weight loss effect can be seen. As a result, it is possible to lose weight by reducing the energy intake by listen 60 dB of Korean traditional music (Jeonggak Gayageum, Sanjo Gayageum, Jeongak Ajaeng, Yanggeum, Sepiri and Danso) during the meal. Conversely, if you want to increase your energy intake, you have meal with listening to Korean traditional music at around 90 dB, such as Sanjo (81.3 dB), Daffy (80.2 dB) and Ordinary (86.7 dB).

Overall, through the study on the characteristics and volume of Korean traditional instruments and a study on the change of food intake through music it suggests that Korean traditional music belonging to 60dB brings weight loss effect. As a result, when meal with listen to Korean traditional music have, can show the effect of weight loss by lowering energy intake rate. However, future studies should be performed to reduce the energy intake by increasing the exposure period to Korean traditional music.

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CONFLICT OF INTEREST

None

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