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Sound Therapy in Prophylaxis and Speech Therapy Rehabilitation[2]

Abstract: A sound massage method according to P. Hess, which can significantly influence the prophylaxis and rehabilitation work in speech therapy, has been presented in this article. Its main value is its capability to relax humans, to develop optical, auditory, kinetic coordination and creative imagination. The attractiveness of the exercises using sound bowls, gongs, chimes proposed to the children may bring good results, as observes the author of this text, who works within this field of research with kindergarten children.

Key words: sound, prophylaxis, rehabilitation, emission exercises, breathing exercises, hearing exercises, sound massage.

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Abstrakt: W artykule przedstawiono metodę Masażu Dźwiękiem według Petera Hessa, która może znacząco wpływać na pracę profilaktyczno-rehabilitacyjną w logopedii. Jej walorem jest przede wszystkim zrelaksowanie człowieka, rozwijanie koordynacji wzrokowo-słuchowo-ruchowej i wyobraźni twórczej. Atrakcyjność ćwiczeń z wykorzystaniem mis dźwiękowych, gongu, dzwoneczków zaproponowanych dzieciom może przynieść dobre i skuteczne efekty co podkreśla autorka tekstu, która nad tym obszarem pracuje z dziećmi przedszkolnymi.

Słowa kluczowe: dźwięk, profilaktyka, rehabilitacja, ćwiczenia emisyjne, oddechowe. słuchowe, masaż dźwiękiem.

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1. Introduction

The properties of the effect that sound has on a human body have been appreciated for a long time. Since the beginnings of mankind, cultures have cultivated instructions containing the mysteries of sounds. Religious chants, gongs, chimes, instruments, mantras, prayers have served a purpose of integrating one's emotions, mind, body and soul.

The usage area of therapeutic intervals, tones, melodies and scales has increased (Bańka, 2001; Hamel, 1995).

There are significant connections between the parameters of sounds that reach the ear and sensations provoked by them (Moore, 1999).

The sound massage method of Peter Hess is one of many therapeutic methods allowing complete relaxation of children and adults. This can be used by specialists with proper qualifications. The method is less comprehensible compared with other methods described in literature. Its great effects are beneficial in prophylaxis and rehabilitation, which has been proved by studies and experiments (Hess, 1999; Musioł, 2007; Portalska, Portalski, 2002, 2005, 2007; Zurek, 2007; Kataryńczuk-Mania, 2002, 2007; Matuszak, 2007). This is especially so in the modern world, carrying threats and difficulties of having a bad influence on human psychophysical condition. In this article I will make an effort to describe the method and showing the advantages of its usage in pedagogical and speech therapy practice.

2. Method characteristics

The Essence and structure of sound

Solid bodies are the source of sound (stretched strings, membranes, metal plates or a human larynx) when put in vibration they make the air compress and decompress. While spreading out equally in every direction, the air reaches the ear as an acoustic wave, which is then received by the brain in the form of an auditory sensation, meaning a sound. The sound exists as a result of a vibrating motion of solid bodies, which accelerates the process of general body cell growth.

Loudness is a "subjective magnitude that can't be directly measured (...). It is defined as an attribute of an auditory sensation compared to which other sounds can be arranged on a scale expending from quiet to loud" (Moore, 1999, p. 66).

Sound duration is specified in music by rhythmic values combined with determining the tempo of a composition.

Timbre includes volume level, height of sound, and number of tones. Timbre is an auditory sensation attribute that allows the hearer to distinguish two sounds of equal height and volume as not being similar.

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Timbre differences allow us to distinguish sounds of the same note played on a piano, a violin or a flute (Moore, 1999, p. 268).

"Every organism holds its own vibration value (...). If the value is known then with the inner idea of it, the organism or other form of existence can be analyzed and realized" (Hamel, 1995, p. 149).

A human organism is a resonating body, just like musical instruments which are effected by frequencies emitted by the outside environment.

Auditory sensations

Auditory sensations along with auditory perception are a part of a cognitive process informing us about the specific features of a sound phenomenon. Sound waves of different frequency and amplitude stimulate the hearing sensation. Basic hearing sensations include the height of sound that is represented by the amplitude of sound waves, the loudness which is represented by the volume, duration and multi-dimensional impression of the tone that is influenced by the summary of interactions between frequency and volume, as well as the arrangement of formats in the sound spectrum.

Characteristics of sound bowls, gongs, "Shanti" chimes

The sound bowls consist of 12 different alloys, they are made in a variety of shapes and weights. They are forged and polished by hand. One should not clean them because they are cleaned by their own sound. To play them we use felt sticks that come in different sizes, for example, we use bigger sticks to play the belly bowl and smaller sticks for others.

The gong is a round plate with sides curved almost at a right angle. The plate vibration is caused by striking it with a wooden stick with a felt ending that results in one long sound (its often said that "the gong sings") which is suppressed by touching the gong with one’s own hands.

The tam-tam is a variant of the gong. It is a bit bigger with rounded edges and a convexity in the middle of the disk. It is hung upon a special stand. It is struck with the same kind of stick as the one used with a gong and it gives a similar deep, loud and long-lasting sound, which is, however, a bit lower. It is important to choose an adequate instrument with a pleasant sound.

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a)  b) 

Photo 1. a) Sound bowls; b) A scarf with teddy bears.

 

a) b)

Photo 2. a) A gong; b) A little *Tam-tam*.. gong.

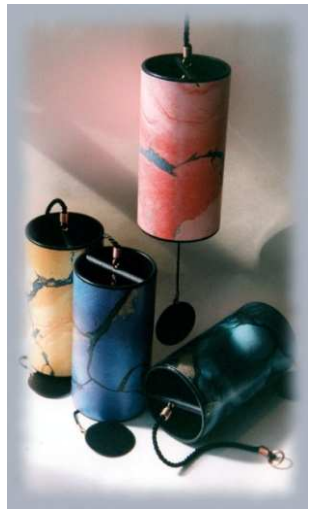

Photo 3. "Shanti" chimes.

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"Shanti" chimes, rich in harmonic tones, are also used in therapy. A "Shanti" chime is an authentic musical instrument, an original creation of high quality. Hand-made in the Pyrenees, each chime is the result of meticulous craftsmanship. Eight chords are welded with silver into a metal plate at the base of a resonance tube. When we gently move the string, beautiful sounds in different scales can be heard:

– moon reflection, scale: GIS, DIS, FIS, A, C, DIS, FIS, AIS,
– crystal morning, scale: G, H, D, G, A. B, D, A,
– sundance, scale: A, CIS, GIS, B, CIS, E, GIS, E,
– golden harvest, scale: E, G, B, C, E, G, B, C,
– echo of silence, scale: AIS, C, CIS, F, FIS, AIS, C, F.

They are used in practice as a background theme while reading fairy tales, teaching poems and during perceptive and creative games, riddles, phonation and articulatory exercises etc.

Bowl placement during therapeutic sessions

The massage can be performed while lying down, or in a sitting or standing position. Mattresses, colourful pillows and blankets are prepared for the children.

a)  b) 

c) 

Photos 4 (a, b, c). Children from the Special School Complex No. 4 in Sosnowiec (photos by Wojciech Skarbka).

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During the massage, we put particular bowls: articular, abdominal, cardiac in proper places and with a felt stick we gently stimulate the vibration. During the massage, the placement of the bowls is changed, you can also strike the bowls around the body using different bowls, e.g. the planets or chimes.

During group sessions bowls can be placed near children's feet, preferably in a circular manner. The therapist, in turn, strikes the bowls around the children and observes their behavior, their reaction to sounds. The bowls can all be placed in the middle and the children sit around them. Sometimes the kids eagerly change the position, for example they lie down on their bellies or on their backs. When they are comfortably positioned, the teacher begins therapeutic exercises.

The frequency of massages

Massages can be preformed once or twice a week depending on individual needs (Hess, 1999b). The most efficient way of performing them is to start the massages before other activities – having the subject lying or sitting, then after a short break we can start the therapy. There may be a variation in the application of the method, one of which is to let the child repeat after the therapist striking the sound bowl while it still rings or in pauses between sounds.

The advantages of the massage

The main goals of this method are: loosening + release = relaxation.

Photo 5. L. Kataryńczuk-Mania: relaxation.

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The micro-vibrations of the sound bowls improve blood circulation, increase regeneration of tissue and toxin extraction.

H. Portalska and M. Portalski (2007) during their studies on sound bowls' therapeutic abilities have observed that children became more tolerant to other forms of rehabilitation and therapies (incl. the invasive ones) and that they had the will to improvise with sound bowls together. That, combined with the possibility of mixing therapy and fun, allows their attention to be drawn away from unpleasant sensations.

The massage allows for mental and physical relaxation, overcoming anxiety states. Furthermore, it eases and deepens breathing, improves the ability to concentrate, causes a sense of beauty, joyfulness, self-confidence and a sense of security in a person.

Massage

We start the massage with the right foot by placing the articular bowl and ringing it gently, having the subject lying on his belly in a comfortable position. We repeat the process with the left foot. The therapist encourages focusing on relaxed breathing and on the sound of the bowl. Then, he places the abdominal bowl on the lower parts of the spine forcing the bowl to gentle vibrations by striking it with a felt stick. The sensation is very pleasant allowing a state of total relaxation. Next, the cardiac bowl is placed between the shoulders. That way the sound can enter the body easily, causing pleasant vibrations releasing it from tension. Now the subject lies on his back and the bowl is placed on his belly. At that point, a feeling of pleasant warmth and lightness occurs, once again allowing relaxation. The cardiac bowls' higher tone provides a feeling of ease. The sound radiates with joy, this area is released from stress, tension and anxiety. At the end of the massage chimes are used to re-stimulate activity.

3. The application of the method in speech therapy

As means of therapeutic preventive treatment and therapy, G. Jastrzębowska (1998) proposes exercises in breathing, phonation, speech organ (improving motor activity, kinesthesis of articulation organs), articulation, listening auto-control, and phonetic hearing. All of them can be performed with the sound therapy method of P. Hesse (1999a). The activities provide an opportunity for enabling contact, searching, exploring, comparing, for sharing remarks, emotional states; they stimulate linguistic experiences, expand vocabulary, eliminate fears, shyness, disordered behavior; they help in concentrating on sounds and their features, in differentiating such features of acts of speech, as rhythm, accent, intonation, tempo; they also develop memory and a have positive

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influence on the development of the whole body.

Breathing exercises are exercises that deepen breathing, expand the exhalation phase, activate the diaphragm and release excessive muscle tension.

Children's vocal apparatuses develop along with their overall body development. The maturation of the vocal apparatus is connected with the growth of the larynx, which lasts from the third until the fourteenth year of life.

Children need to keep a proper posture during emission exercises. Breathing involves the work of the rib, the abdominal and the diaphragm muscles, and therefore, as H. Burzyńska pointed out (1996), the following rules should be observed:

– correct posture should be maintained (a straight back, facial muscles, jaw, lips, tongue, arms and neck – relaxed),

– breath should not be taken in at random, but rather during pauses or when indicated,

– the upper chest should be kept at the same level after the exhalation (arms should not be raised),

– inhalation should be done through nose and slightly open lips,

– restraint should be exercised when leading the sound (the quality of the sound depends on that). Proper breathing and articulation should be taught, head resonance should be activated.

J. Uchyła-Zroski (1998) divides children's voices into four groups, based on the place and the performed function. In the first group of organs, which include the midriff, lungs and the trachea, sound is prepared. The second group is made up of the larynx, along with its muscles and cartilages, as well as vocal cords, thanks to which a sound can be made. The third group determines the timbre of the voice, and here the larynx cavity, throat, mouth, nose, hard and soft palate along with the uvula, tongue, teeth, lips and the maxillary, frontal, ethmoid and sphenoid sinuses come into play. The fourth group, the so-called "apnea" is based on the recuperation of the breathing and phonation organs.

The breathing exercises are to teach the habit of using the costophrenic breath, and the lengthened and evened exhalation phase.

Phonation exercises improve working with the voice and protect the articulatory apparatus from strains. They aim at developing a proper height of the voice and the ability of using the correct voice intensity when speaking.

Vocal organs' ability exercises include exercises of the tongue, lip and soft palate competence, teaching to swallow properly, and improving the coordination of the vocal organs.

In music education, articulation denotes a method of performing a sound. Articulatory exercises include clear sound articulation (both vowels and consonants) and exercises of pronunciation.

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The essence of aural auto-control exercises mark the differences between correct and incorrect pronunciations of a given sound.

Table 1. Selected examples of exercises based on the P. Hess' Method of Sound Therapy

		Selected exercise examples	
No.	**Title**	**Course**	**Effects**
01.	*Breathing with the sound of the bowl (or chimes)*	After hearing the sound of the bowl, the child breathes efficiently for as long as the bowl can be heard The exercise can be done in turns: therapist-child or child-different child etc.	The child focuses on the sound, develops the ability to breathe and the auditory sensitivity, and also relaxes
02.	*Pyramid*	Therapist holds the universal bowl on his palm and strikes it with a stick while the child keeps the therapist's palm holding the bowl up. When the child feels the vibrations, he or she pronounces vowels one after another with any chosen volume for as long as the bowl can be heard.	The child develops the ability to listen and pronounce the vowels carefully.
03.	*Water bowl*	Water is poured into any given bowl, after striking it with a stick, the child blows with a straw on the patterns arising on the water surface or it blows directly at the pattern, while at the same time remembering to breathe properly.	The children develop perception, proper reaction to instructions, by breathing properly.
04.	*An enchanted composition*	Four bowls of a different size are placed in the corners of the room, the children stand in the middle of the room. When the sound is heard they go in the direction of the bowl making the sound, when they get to it they begin to breathe.	The children coordinate their sight, hearing and mimic the proper way of breathing while moving in space.
05.	*A syllabic composition*	The therapist places notes with different syllables in the sound bowls. He strikes each bowl one by one and the children come to the syllable. During the pause, each child pronounces the chosen syllable written on the note and then they connect the syllables into words. The sound of the high-pitched bowls signalizes the end of the sentence.	The children pay attention to the proper sound of syllables, they focus their attention on instructions, and react consciously to sound signals.
06.	*Sound echo*	Two children sit frontally to each other next to the bowls and they prepare for a therapeutic discussion. The first child strikes the bowl and uses any chosen vowel repeating it for as long as the	The children learn to focus attention on the sound and cooperation, they practise skillful vowel pronunciation.

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Selected exercise examples

No.	Title	Course	Effects
		bowl's sound can be heard. Then, the partner answers in a similar fashion.	
07.	*Syllable chain*	The children stand in a circle. The therapist walks around with the abdominal bowl and strikes it while at the same time asking for any two syllables. Everyone pronounces the syllable aloud when the therapist is next to them and then repeat it in their mind when he leaves.	The children memorize the dynamics of the syllable sound, exercise memory and concentrate.
08.	*Sound bee*	The whole group mimics the sound of a bee: *buzzzzzzz*. A selected child stands in the middle of the room and imitates the flight of a bee with the hands (when the hands are raised – the children make high buzzing sounds, when the hands are lowered – the sounds are also lower), when the bee makes a circle (the rest of the children sit), when it sits on a flower (the child strikes any of the bowls) the group becomes silent When the children hear the sound of a tam-tam, the child is replaced by another one.	The children imitate the buzzing of a bee correctly, with different levels of dynamism, they notice pauses and learn the perceptive-motor coordination.
09.	*Sound dice*	When the therapist throws the die and an elephant comes out as a result, then the child approaches the abdominal bowl, strikes it and says the word "elephant" a few times in a low voice. When a monkey results from the throw, the child approaches the abdominal bowl and in a middle register says the word "monkey". When a bird results, the child approaches the articular bowl, strikes it and with a high-pitched voice speaks the word "birdie". To finish up, the children strike their bowls simultaneously and speak according to the pattern.	The children differentiate the height of the sounds, focus on the proper pronunciation of words, match and compare different sounds and therefore develop the ability of feeling the timbre of the sounds.
10.	*Walking sounds*	Bowls are placed in different parts of the room and the children are next to them. At the therapist's signal children strike their bowls simultaneously, and listen to many interesting sounds. Next, at the therapist's signal, they walk around the room saying their favourite syllables in any manner they choose. When they hear the sound of the Alpine chimes, they return to their	Children learn to distinguish multi-tone sounds, they focus attention on the duration of sounds, the quality of comprehensive hearing, speaking within a group (the so-called voice clusters).

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Selected exercise examples

No.	Title	Course	Effects
		bowls.	
11.	*The humming*	When children hear the sound of the abdominal bowl they hum the sound *mmm…* in a low-pitched voice and gently tap their nostrils with the tips of their fingers, when they hear the articular bowl, they hum in a high-pitched voice.	Children learn the proper sense of resonance, they feel the vibrations around their nose and teeth, tingling of the lips and the oscillation of the alae of their noses.
12.	*We like playing with voices*	The children link vowels and consonants into syllables, then into a word and then pronounce them	The use of the sound method (Minczakiewicz, 1997, p. 177)
13.	*Hidden sounds*	Three sources of sounds are placed in the room (gong, cardiac bowl, small zen bowl). With eyes closed, the child, should find these sources.	Children exercise their hearing perception and spatial orientation
14.	*The woollen sound*	The children sit in a row and hold balls of wool in their hands. The children standing opposite untangle the skin when they hear the sound of the big bowl. They must also choose any syllable and repeat it. When the sound of the bowl silences, the children stop untangling and humming. The pair that untangled the most wins.	Children exercise pronunciation, learn to focus on auditory sensations and to analyze them.
15.	*Our names*	The children sit in a circle, after hearing the chime ringing they say their names in turns. When they hear the sounds of the bowls they show, using movement, what they like doing the most. After that, a song called Karuzela z imionami (Carousel with names), music by Z. Ciechan, lyrics by A. Bernat (Smoczyńska-Nachtman, 1992, p. 27-29) may be sung.	The children practise auditory perception and memorize the names of their friends.
16.	*Proverbs*	The children repeat after the teacher like an echo the Polish proverb *W marcu jak w garncu* ("March comes in like a lion and goes out like a lamb") using different rhythms, timbre and tempo of speech. First, a group of children says '"w marcu" a couple of times and strikes the bowls that sound low and the second group answers *jak w garncu* and strikes the bowls that sound high. The reaction to the pace of the exercise is what is important here. During the next game the children illustrate the sound of the wind, the rain etc. with their voice.	The children mimic the proper articulation, they focus their attention on active listening and react to the pace of the exercise. They train their vocal apparatus and speech expression.

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Selected exercise examples

No.	Title	Course	Effects
17.	*The sound cake*	The children listen to a song called *Tort Blues* ("The blues cake", music and lyrics by M. Tomaszewska) and at the same time they place the bowls in the form of a cake, with the smaller bowls in the middle and the bigger ones on the edges. They talk about the meaning of the song for a moment. The teacher then invites the children to take a piece of "the sound cake". They come one at a time, strike the bowl and take their piece of "the cake" saying yummy yummy with a different level of dynamism. They then sit down with their bowls in a big circle. The sound of the chime informs that the meeting is over.	The children focus their attention on the lyrics of the song and speak about it, they differentiate sounds, their dynamics, they stimulate their imagination.
18.	*The sound score*	Different consonants are placed in the form of a music score on a big sheet of paper. They are to be performed with a different level of dynamism and pace. The children choose any line of consonants and the right bowl or chime. The teacher, who is a conductor, shows on the score which line is being played right now. The playing is connected with pronouncing the consonants: the score – *f… f… f… f… f… F… F… F… F… / Ch!… ch… ch… ch… ch… ch… Ch! / m m m m m / M M M M M / W! wwww W! wwww W! wwww*. At the end the children perform "tutti" and an aleatoric piece is formed.	The children pronounce and memorize the consonants, they follow the record of the score and play it, thus the visual-auditory and the perceptive-motor coordination are being developed.

The aim of phonemic hearing exercises is to make analyses and syntheses through model pronunciation and listening. According to E. Sachajska (1981, p. 58), phonematic hearing "is formed during children's speech development in a spontaneous, unintentional way. In case of children having difficulties with auditory sound differentiation, the isolation and lining of sounds, as well as with six-year-old children who have not yet started their reading and writing education, it is advisible to conduct the exercises in an intentional and deliberate way, because performing operations at the level of auditory analysis and synthesis requires a lot of perceptive proficiency and proper mental operations".

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Photo 6. L. Kataryńczuk-Mania (in the bowl), to the left: J. Kozłowska and a kindergarten teacher.

In the practice of music education and therapy, exercises for the vocal apparatus, relaxation exercises and artistic expression exercises are often used when working with pre-school children. Below, selected examples of exercises using the P. Hess' method of Sound Therapy are presented.

a)  b) 

Photo 7 (a, b). Children from educational institutions during therapeutic classes. The photo was taken by Wojciech Skarbka, a sound massage therapist.

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4. Conclusions

Sound is an excellent means of non-verbal communication, and therefore it is suitable for the shaping and developing of non-verbal ways of expression and communication. Using Peter Hess' Sound Therapy on speech therapy practice may be beneficial to the course of therapy. To date, the experiences of the author, who has been working with this method for ten years, have yielded positive results. The instruments in the form of gongs, tam-tams, bowls and chimes are a real attraction during classes and increase children's experiences, while at the same time they help them relax efficiently.

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