

MARTA WYSOCKA\*,  
MAGDALENA KWATERKIEWICZ\*\*

\*Maria Curie-Skłodowska University in Lublin  
Department of Logopedics and Applied Linguistics

\*\*AGA Neurological Rehabilitation Clinic for Children and Teenagers, Radom

ORCID ID: <https://orcid.org/0000-0002-7728-6102>, <https://orcid.org/0000-0001-6848-9322>

## Therapy Program for Improving the Expression Speech Prosody

### SUMMARY

The article presents the authors' own program aimed at improving the expression of prosody in patients with dysprosody, at shaping speech prosody in children, and improving prosodic skills of adult speakers.

The program consists of exercises improving the expression of individual prosodic features and phenomena, as well as the realization of prosody functions in communication. The presented solutions are based on published findings concerning the realization of prosodic phenomena in speech pathology and in normal speech, and the methodology of logopedic management in activities serving to build prosodic skills.

**Key words:** speech prosody, prosodic disorders, improvement of prosody expression

### INTRODUCTION

Prosodic competence and skills play an important role in linguistic communication. At different stages of ontogeny they help the child acquire language at the phonetic-phonological, lexical and syntactic levels. The process is present already during prenatal development and intensifies in infancy, being also highly active at preschool age (Bouvet, 1996, Höhle et al., 2009, Grassmann i Tomasello, 2010, Gratier i Devouche, 2011, Carvalho, Dautriche i Christophe, 2016, Gervain, 2018). The ability to perceive and express prosodic phenomena combined with their functions facilitates conveyance of meanings, emotions and intentions.

Prosodic development in childhood, assisted by expressive prosody present in child-directed speech (Trainor et al., 2000, Kempe et al., 2010, Gervain, 2018), allows the child to acquire prosodic competence at the level that enables him/her to perceive prosodic phenomena together with their meanings, which enhances the efficacy of linguistic interactions s/he takes part in. At a later age, well-developed prosodic competence also impacts positively on the development of the ability to read fluently with comprehension (Whalley and Hansen, 2006, Benjamin and Schwanenflugel, 2010).

The occurrence of factors disturbing the correct prosodic development or causing the breakdown of acquired skills results in dysprosody or aprosody (cf. Wysocka, 2012). These phenomena can be observed in many speech pathology entities: dysarthria, pragnosia, aphasia, oligophasia, alalia, in autistic persons, those with impaired hearing or with voice disorders. (cf. the review of publications *inter alia* in: Wysocka and Kwaterkiewicz 2018). In such situations it is necessary to take appropriate therapeutic measures aimed to develop prosodic skills by training the perception and/or expression of features of suprasegmental phenomena. Literature on the subject contains methodologically organized proposals (methods and programs) serving to achieve this goal (*inter alia* Kowalska, 1989, Zoller, 1991, Hargrove and McGarr, 1994, Rosenbek et al., 2006, Yucel et al., 2009, Ballard et al., 2010, Rothstein, 2013, Torppa et al., 2014, Peppé, 2015; cf. the discussion of most of these programs in: Wysocka, 2016, 2018). It should however be stressed that features of prosodic phenomena as part of the phonetic-phonological subsystems of individual languages differ, consequently, foreign-language programs meant to improve prosody have many limitations regarding their use in other languages.

In Poland, the program for improving the perception and expression of prosody in impaired hearing children was devised by Alina Kowalska-Pińczak (1989) in the late twentieth century. It uses music material in order to develop the ability to perceive individual sound parameters. Considerable significance is also attached in it to practicing voice emission exercises. The measures used in her own practice to develop intonation and word stress in the speech of children with hearing loss are also described by Helena Sieńkowska (1993). Recent studies on the rehabilitation of persons with hearing loss (Szuchnik et al., 2005, Kurkowski, 2013) take into account the successive stages of development of auditory skills necessary for the use of speech prosody: learning to detect the presence (or absence) of sounds, discrimination and identification of sounds, speech comprehension under conducive conditions, and under conditions of natural speech perception. The final stage of rehabilitation focuses on training the ability to control the features of prosodic phenomena used in speech.

In Polish literature there are also publications on developing prosodic skills in stuttering and dysarthric patients. They discuss training of specific prosodic features or phenomena, whose realization is disturbed in a given speech pathology entity. In the therapy of stutterers, therapeutic management focuses on the purposeful modification of the tempo and rhythm of speech. In his program, in turn, Mieczysław Chęciek (2007) takes into account the following stages of work on speech fluency: respiratory, phonatory and articulatory exercises, exercises for the position, without unnecessary tensions, of articulatory organs when starting to speak, exercises for soft vocal attack, and exercises for automatization of acquired abilities. Prosodic features and phenomena are appropriately modified. Special attention is paid to the speech tempo, which is slowed down as a result of the prolonged duration of vowel articulation. Another perspective in the treatment of stuttering has been adopted by Tomasz Woźniak (2018), whose program uses the natural speech rhythm (NSR). The tempo of speech is not significantly slowed down, the patient tries to only prolong the articulation of the last word in a phrase or modify (slightly lengthen) the sound s/he finds difficult to articulate, owing to which the speech rhythm continues to be natural and is not exposed to artificial distortion (Woźniak, 2018). A similar stance is taken by Zbigniew Tarkowski (2018), who, in the system therapy of stuttering (STS), acknowledges the superiority of natural speaking technique, not modified by the therapist, because it does not increase the patient's communicative stress. In this program, work on speech fluency is conducted without interference in the patient's speech rate (Tarkowski and Okraśńska, 2018). Measures serving to improve respiratory-phonatory functions and to realize prosodic features and phenomena in dysarthria are described by Olga Jauer-Niworowska (2009). They are mainly oriented to exercising the ability to properly intonate, stress, rhythmize and to adjust the tempo of utterance, using appropriately selected linguistic material.

In the field of artistic speech therapy, the proposals of measures boosting prosodic skills were presented by Bogumiła Toczyska in her publications (2007, 2008). Many directions concerning the relationships between emission processes and prosody expression can also be found in other studies (inter alia Tarasiewicz, 2003, Szkiełkowska and Kazanecka, 2011, Kazanecka et al., 2016).

Despite the abovementioned valuable initiatives, Polish logopedics does not have a therapy program that would take into account the current state of knowledge on the mechanism of prosody perception and expression, which could be utilized in supporting prosodic development and improving the perception and realization of the prosody of Polish in persons with speech disorders. In response to the need to create such a program, a study has recently been published, in which we present an authorial program serving to improve prosody perception

(Wysocka and Kwaterkiewicz, 2018). The present article is its continuation, the goal being to present a program improving the expression of prosodic features and phenomena.

## I. PRELIMINARY ASSUMPTIONS OF THE PROGRAM

The program version presented in this paper focuses on highlighting the main skills developed in particular exercise groups because a detailed description of exercises would go beyond the scope of the study.

The program is multipurpose in character. When using it in dysprosody occurring in individual speech and hearing disorders, account should be taken of the necessity of adapting the methods of management to the patient's needs and capabilities. A condition for the effectiveness of exercises intended to improve prosody expression is the well-functioning mechanisms of its perception. If the mechanisms are disturbed, a perception training should be conducted with the patient (see Wysocka i Kwaterkiewicz, 2018).

We assume three basic stages of work on prosody expression.

1. Stage One comprises measures consisting in developing the conscious **realization of individual features of sounds**: their pitch, loudness, duration and timbre, and involving the function of auditory self-control. Exercises conducted at this stage use speech signal and singing.<sup>1</sup>
2. Stage Two consists of exercises for **expressing individual prosodic phenomena in speech**: intonation, lexical and phrasal stress, rhythm and tempo, and emotional prosody in accordance with the therapist's specific recommendations.
3. Stage Three involves the **realization of functions performed by speech prosody**, using the skills acquired in the previous stages. The purpose of the exercises at Stage Three is to build the ability to express the prosodic characteristics of speech in a specific communicative context, according to the type of utterance, intention, emotion, or situation.

While improving prosodic realizations, the therapist should take into account the principle of grading task difficulties. In the initial stage of work, the therapist's instructions and prompts as well as graphic aids may prove to be desirable, yet it is the measures consisting in magnifying phonetic contrasts in speech, in exaggerating specific sound features and prosodic phenomena that play the most important role in it.

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<sup>1</sup> The efficacy of using music, and singing in particular, to develop linguistic, including prosodic, skills is emphasized in many studies (inter alia Kowalska, 1989, Brown, Martinez, Parsons, 2006, Wan et al, 2010, Zarate et al., 2010, Patel, 2011).

## II. EXERCISES CARRIED OUT AS PART OF THE PROGRAM

### 2.1. Expression of individual sound features

Stage One consists of exercises that develop the ability to consciously express individual sound features: pitch, loudness, length and timbre. The ability to use them in speech enables the speaker to realize suprasegmental phenomena.

If disorders of respiratory, phonatory or coordinative functions are found in the patient, it is necessary to conduct voice emission training with him/her. As there are numerous publications on the methods of conducting voice emission exercises (inter alia Kowalska 1989, Tarasiewicz 2003, Walencik-Topiłko, 2009, Szkiełkowska and Kazanecka, 2011, Binkuńska 2012), they will not be described in detail in the present study.

The efficacy of improving the expression of individual sound features is largely influenced, in addition to the acquired emission abilities, by active auditory and sensory self-control. In the case of having diagnosed the disorders of these functions, therapeutic measures should also include preparatory training oriented towards developing them.

At the beginning of therapy, the therapist's assistance is recommended in the form of his/her instructions, which should then be gradually limited. The first stage of exercises shaping the expression of individual sound features consists in imitating the therapist's realizations, followed by deferred imitation,<sup>2</sup> and by the most difficult stage – expression by oneself. The difference between the musical and linguistic signals used in exercises, collated on the basis of contrast (high/low, loud/soft, long/short) should be considerable at first, then smaller and smaller, but always perceptually distinct. In the activities described, particularly at the initial stage, graphic aids showing the level of sound pitch, loudness or length may prove helpful.

#### **Pitch expression exercises**

Exercises in this group are an introduction to further measures in improving prosody expression, first of all intonation and stress as well as emotional prosody, in whose production the changes in sound pitch play a significant role. The goal of the exercises in question is to develop the ability to reproduce spoken sounds of a specific pitch and its modulation by oneself. The pitch is relative here and is defined in relation to the patient's vocal diameter and range. The exercises should also aim to determine the optimum mean range of the patient's vocal pitch and to make the patient use it his/her during utterances. The activity that precedes and

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<sup>2</sup> Initially, it is a shorter, 3-second delay, easier for the patients because it is within within the duration of the functioning of short-term working memory, then lasting 5 seconds or longer (cf. Crowder, 1976).

prepares for the expression of speech sound pitch is singing. Exercises to express pitch use mainly vowels and syllables as well as their sequences. Words and longer phrases are realized here in tasks of expression in speech with a constant pitch. Realizations with a variable pitch are included in exercises improving intonational expression. We assume, however, that they will be used in signing.

Pitch expression exercises improve:

- Imitation - in singing and speech – of vowels, syllables, vowel or syllable sequences, words and phrases with different constant levels of pitch (initially high and low to build a distinct contrast, and then also with a medium pitch level),
- Deferred imitation of vowels, syllables and their sequences with different constant levels of pitch,
- Realization by oneself, in speech and singing, of vowels, syllables and their sequences, words, and phrases with different constant pitch levels,
- Imitation, deferred imitation, and realization by oneself of vowels and syllables performed alternately high and low in sequences with a different, gradually increasing number of elements (e.g. low – high, high – high – low, etc.),
- Imitation, deferred imitation, and realization by oneself of vowels and syllables and their sequences in speech and singing, with a gradual modulation of pitch (increasingly high/low),
- Imitation, deferred imitation, and realization by oneself of vowels and syllables and their sequences in speech and singing (in addition, words and longer phrases in singing) with a specific variable course of pitch (falling-rising, rising-falling), using graphic elements (e.g. notation and solmization names for music sounds, lines depicting changes of sound pitch in spoken vowels or syllables).

### **Loudness expression exercises**

Like the previous group of exercises, this one is also a preparatory stage for proper exercises of prosody expression. The ability to modulate the loudness of speech signals is indispensable for the correct expression of stresses in a speech sequence, in creating its rhythmic organization, and also in realizing the paralinguistic function of prosody, associated with expressing the sender's emotions and intentions. The level of sound loudness is relative in the proposed exercises. It depends on the expressive capabilities of the person practicing exercises. This group of exercises develops the following skills:

- Imitation in speech and singing of vowels, syllables and their sequences, words and phrases with different constant loudness levels (loud, soft, then also medium loud),

- Deferred imitation in speech and singing of the constant loudness levels of the foregoing structures,
- Their realization by oneself in speech and singing,
- Realization of vowels, syllables and words in sequences with constant loudness levels (soft or loud) and with a different, gradually increasing number of elements (e.g. loud– soft, soft – soft – loud etc.)
- Imitation, deferred imitation and realization by oneself in speech and singing of vowels, syllables as well as their sequences, words and phrases with loudness modulation (increasingly loud/soft),
- Imitation, deferred imitation and realization by oneself of vowels, syllables and their sequences, words and longer phrases in speech and singing with variable loudness (e.g. soft – louder – softer, loud – softer – softer), using graphic elements (musical graphic symbols or lines illustrating changes in loudness).

### **Length expression exercises**

Their aim is to sensitize patients to differences, initially extreme and then moderate, in the length of sounds of their own speech and to develop their ability to consciously modify it (length). These skills are essential for controlling the realization of the speech tempo and phrasal stress. Duration differences in speech also perform expressive functions, when the speaker wants to convey his/her intentions (e.g. admiration, delight or irony), or emotions by means of prosody. The duration of the long and short elements used in exercises is relative, yet the difference between them should be perceptually distinct. The exercises in question comprise:

- Imitation, deferred imitation and then production by oneself in speech and singing of single vowels and syllables with a long or short realization,
- Imitation, deferred imitation and then realization by oneself (e.g. based on a graphic pattern) of rhythmic sequences in speech and signing, consisting of vowels as well as long and short syllables, in sets with a different, gradually increasing number of elements (e.g. long – short, short – short – long),
- Imitation and deferred imitation of rhythmic sequences with a different degree of complication, consisting of different rhythmic values, reproduced by clapping, playing percussion instruments, locomotor movements, and by spoken and sung vowels and syllables.

### **Timbre expression exercises**

In the course of realizing an utterance, the timbre depends first of all on the structure, shape, size, and activity of upper resonators and lower (thoracic) resonators, as well as on the muscle tone within the speech organs. The exercises

in this group are a preparation for further measures whose goal is to improve prosody expression, particularly its emotional function. Of extreme importance here are resonance exercises which enable the speaker to use resonance spaces in an entirely conscious manner. This group comprises the following exercises:

- Imitation in speech and singing of vowels, syllables as well as their sequences with the modulation of the positioning of the tongue, soft palate and the degree of lowering of the mandible, using sensory and visual self-control,
- Imitation in speech and signing of vowels, syllables and their sequences with the slightly increased or reduced muscle tone within the articulatory, phonatory and respiratory apparatus, using sensory self-control,
- Imitation and deferred imitation in speech and singing of vowels, syllables as well as their sequences, words, and phrases, with the prevalent activity of lower resonators (with a dark timbre) and upper resonators (with a bright timbre) juxtaposed on a contrast basis (bright timbre – dark timbre, dark timbre – bright timbre),
- Their realization by oneself in speech and signing in sequences with a varied, gradually increasing number of elements.

### **1.2. Expression of prosody**

The next stage comprises **exercises for realization of intonation, stress, rhythm, tempo and emotional prosody**. They make use of the abilities acquired as part of the emission training and exercises to express sound features. The goal of the described group of exercises is to develop the patient's ability to express prosody by him/herself in the utterance realized. Also at this stage we suggest the principle of grading difficulties, consisting in passing from imitation to deferred imitation to realizations by oneself. In developing the expression of prosody, only speech sounds are used. In the initial stages it is necessary to use the technique of exaggerating phonetic contrasts, which leads to highlighting the features of prosodic structures. At later stages phonetic contrasts should be reduced, so as to produce realizations characteristic of natural, undisturbed speech.

#### **Intonation expression exercises**

The goal of this group of exercises is to develop the ability to use diverse intonation structures. In the initial stage, the intonation contours used in them should be characterized by a large range. This is intended to facilitate the patient's perception of differences in voice pitch within them and the auditory self-control of his/her own realizations. With time, this procedure should be limited. Intonation expression can be supported by the use of hand movements or graphic symbols appropriate for changes in voice pitch, illustrating its changes in time. This group consists of the following exercises:



- Imitation of words and sentences of varied length, realized with intonation contours – initially rising, falling and constant, and then rising-falling and falling-rising ones, with the use of graphic symbols illustrating changes in voice pitch (e.g. stairs, arrows), or of gestures (hand movements),
- Imitation of words and sentences realized with intonation contours: rising, falling, fixed, rising-falling and falling-rising, without using support stimuli,
- Deferred imitation of the abovementioned structures,
- Realization by oneself of specific intonation contours within the read-out, repeated and memorially reproduced words and then increasingly longer phrases, using graphic symbols illustrating intonation contours,-
- Realization by oneself of specific contours without using auxiliary material.

### **Stress expression exercises**

The purpose of the exercises included in this group is to use the patient's earlier acquired abilities in exercises for realizing individual sound features (pitch, loudness and length) to develop the correct realization of word stress and phrasal stress in a speech sequence. When covering the exercise material, attention should be paid to the consistency of the realized phrasal stress with the intonation structure of the phrase (within the stressed syllable of the accentuated word a considerable change of voice should occur in comparison with the syllables preceding it). Realization of stress can be supported by motor skills of the hand (e.g. by clapping hands when expressing the stressed syllable) or by the use of graphic aids, helping locate the stressed syllable in a word, or the word stressed in a syllable (e.g. the noted down text with the underlined stressed syllable or highlighted word, or a set of symbolizing objects with an ordered arrangement [from left to right], each one symbolizing a syllable or a word). It might be also helpful for this group of exercises to use a metronome, whose acoustic signal will mark out the moment of the realization of a stressed syllable. Special attention should be paid so that, in the patient's realizations, the prominence associated with the position of stress is initially distinct to a considerable degree and then, as s/he acquires the stress skill, to a lesser degree. Activities realized in those exercises are as follows:

- a) Regarding word stress :
  - Imitation of word stress, initially in two-syllable and longer words, and then in word groups, maintaining the stress-making features characteristic of Polish,
  - Deferred imitation of the stress patterns of words,
  - Reading out words, phrases and then longer text excerpts with stressed syllables underlined, using motor activities (e.g. clapping or stamping) or metronome accompaniment while producing a stressed syllable,

- Reading out words, phrases and longer text excerpts with stressed syllables underlined, without additional motor activities or accompaniment,
- Realization by oneself of lexical stress during the action of reading out, naming, and building short utterances or longer narrative or dialogic utterances;
- b) Regarding phrasal stress :
  - Imitation of phrasal stress, initially in shorter phrases, then in longer ones,
  - Deferred imitation of phrasal stress,
  - Reading out utterances and then longer fragments with the stressed words underlined,
  - Realization of phrasal stress in the word indicated by the therapist (e.g. *W zdaniu „Czytamy powieść.” zaakcentuj wyraz „czytamy”* [In the sentence ‘we are reading a novel’, stress the word ‘reading’.] ),
  - Realization by oneself of phrasal stress in the earlier prepared texts read out, reproduced from memory and in own utterances.

### **Speech rhythm expression exercises**

The aim of the exercises is to sensitize the patient to a regular or quasi-regular temporal recurrence of phrasal and word stress in his/her speech and to develop the ability to realize them. The stress is realized in them in an emphatic way. At the moment of realizing a stressed syllable, clapping one’s hands or another motor activity is advisable to draw the practicing person’s attention to the prominence and the need to increase the breathing and articulatory effort while realizing it (syllable). Like in the previous group of exercises, it may prove helpful to use metronome accompaniment. Exercises should be realized at a moderate tempo (realization of 10-15 sounds per second). During the stress expression by the patient, attention should be paid to his/her realization of respiratory-phonatory-articulatory coordination preventing the excessive overload of the larynx during voice production.<sup>3</sup>

Training of rhythm expression assumes the following activities:

- Imitation of sequences of syllables and words as well as sentences taken from highly rhythmized texts and then from natural speech, with emphasis on phrasal or word stress, realized with clapping hands (or another motor activity) or with metronome accompaniment while expressing accented syllables,
- Deferred imitation and realization by oneself of the abovenamed structures,
- Imitation, deferred imitation and realization by oneself of words, longer phrases and rhythmized texts, produced initially with a greater and then

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<sup>3</sup> This effect is used in the Accent Method (Kotby, 1995) and in the method of the Polish authors – Rhythmic and Motor Rehabilitation of Voice (Kazanecka, Wrońska, Szielkowska, 2016).

lesser emphasis on the stressed syllable, without any additional motor activity and accompaniment.

### **Speech tempo expression exercises**

The objective of speech tempo expression exercises is to develop the skill of realizing optimal, moderate speech tempo, the ability to modify the tempo and to sensitize the speaker to differences between his/her own correct and incorrect realizations (a too rapid tempo or too slow). The group of exercises in question also impacts the development of the ability to control the execution of articulatory movements during a specific time, as well as the number and length of pauses, in order to maintain a uniform tempo and to modify it while producing a speech sequence. We suggest that exercises of articulation tempo and speech tempo (which comprise durations of sounds and pauses in a phonic sequence) should emphasize word stress. The purpose of this type of activity is to rhythmize articulatory movements and to support respiratory-phonatory-articulatory coordination. This measure is also intended to draw the practicing speaker's attention to the stressed vowel and facilitate controlling its length. Like in the groups of exercises for accent expression or speech rhythm, the exercises in the presented exercise block can be performed using a metronome or natural accompaniment (e.g. clapping or tapping out the stressed syllable) at the tempo imposed by the therapist, in accordance with the principle that the accompaniment signal corresponds to the realization of the stressed syllable. When exercising the expression of tempo, especially a quick tempo, attention should focus on maintaining articulatory and diction correctness, and, should the need arise, these should be improved as part of preparatory activities. Differences between individual types of tempo should be perceptually distinct.

The exercises in question cover the following skills:

- Imitation of a specific constant tempo of articulation: slow, fast and moderate, without taking into account pauses occurring in speech sequences in the utilized linguistic material, with the possibility of observing the therapist's articulatory movements, and speaking simultaneously with the therapist while realizing sequences of syllables, words and phrases, the same for the therapist and the patient; the word stresses realized in speech are accompanied by the patient's hand movements (e.g. clapping hands or tapping the palm of the dominant hand on the thigh or table top),
- Imitation of the variable tempo of articulation (increasingly fast or increasingly slow) and speaking simultaneously with the therapist, with the possibility of observing the therapist's articulatory movements, and using the motor activity of the hands,

- Deferred imitation of the constant and variable tempo of articulation, using the motor skills of the hands, with the possibility of observing the therapist's articulatory movements,
- Speaking simultaneously with the therapist, imitation and deferred imitation of the constant and variable tempo of articulation, without using the hand motor skills, utilizing a metronome (the stressed syllable is realized the moment a metronome signal occurs), with the possibility of observing the therapist's articulatory movements,
- Speaking simultaneously with the therapist, imitation and deferred imitation of the constant and variable tempo of articulation, using a metronome, without the possibility of observing the therapist's articulatory movements,
- Imitation and deferred imitation of a specific, constant and variable tempo of articulation in sequences of syllables, words, and phrases, without the possibility of using metronome accompaniment, hand movements, and observing the therapist's articulatory movements,
- Imitation of speech tempo, taking into account the number and length of pauses in syllable sequences, word groups and in phrases, with the possibility of observing the therapist's articulatory movements, and then without it,
- Simultaneous realization by the patient and the therapist of the phonic sequence containing pauses of varied length,
- Deferred imitation of speech tempo (taking pauses of varied length into account), initially with the possibility of observing the therapist's articulatory movements,
- Realization by oneself of sequences of syllables, words, and phrases in a slow, fast and moderate, and variable tempo. .

### **Emotional prosody expression exercises**

The goal of emotional prosody expression exercises is to develop the ability to use the earlier acquired competence in the realization of individual features of speech sounds in the prosodic expression of emotional markedness. Although prosodic emotional expression is individually varied, certain general tendencies can be distinguished with regard to the perceptual characteristics of utterances marked with particular emotions (cf. *inter alia* Sobin i Alpert, 1999). The exercises improve:

- Imitation and deferred imitation and realization by oneself of phrases with varying medium pitch levels and with different ranges of the intonation contour (e.g. a low level and small contour range in utterance marked with sadness, and a high level and large contour range in utter-

- ances marked with joy), using graphic symbols illustrating the level of pitch of speech signal and the range of its changes, or labels with notes: “high”, “low”, “broad”, “narrow”,
- Imitation, deferred imitation and realization by oneself of phrases with different loudness levels (with an increased loudness level in utterances marked with anger and joy, with a lower loudness level – in those marked with sadness), with the possible use of graphic symbols illustrating the loudness level realized or labels with words “loud” and “soft”,
  - Imitation, deferred imitation and realization by oneself of phrases of different length (with prolonged duration in utterances marked with sadness, and with shorter – in those marked with anger), with the possible use of graphic aids symbolizing duration (a long : short opposition) or labels defining the tempo : “fast” and “slow”,
  - Imitation, deferred imitation and realization by oneself of phrases with different timbres, with facial movements expressing basic emotions, with the possible use of labels with names of individual emotions or facial expressions characteristic of them.

### III. REALIZATION OF FUNCTIONS OF PROSODY

The last stage takes into account exercises whose goal is to develop prosodic realizations appropriate for the type of utterance, intention and emotion, and a communicative situation. The exercises make use of the abilities acquired in the previous stages of practicing: the correct expression and conscious control of the features of speech signal that co-create suprasegmental phenomena, phenomena of intonation realization, phrasal stress, speech rhythm and tempo, and emotional prosody. Like in the block of exercises devoted to the realization of the features of prosodic phenomena, it is initially admissible to use large contrasts in the intensity of individual features. This technique should be gradually withdrawn in later stages.

#### **Exercises to express intonation**

At this stage of therapeutic work, the patient uses the skills - acquired while realizing the above described groups of exercises in vocal pitch and intonation - in diverse communicative situations with full consciousness. The aim of this exercise group is to develop the ability to realize specific intonation contours appropriate for a type of utterance. In the initial stage, tasks should be executed with the therapist's support, which will be gradually limited until the stage of realizations by the patient him/herself has been achieved. Quite useful can also be graphic symbols illustrating the contour of vocal pitch in intonation structures.

The goal of the exercises in question is to develop the following abilities:

- Realization of intonation contours characteristic of particular kinds of utterances (declarative, imperative, yes-no questions and Wh-questions, unfinished utterances), initially with the possibility of using graphic symbols; these realizations are executed in repeated or read-out utterances through:
  - a) Imitation, deferred imitation and realization by oneself of the rising contour in yes-no questions and in emotionally marked Wh-questions,
  - b) Imitation, deferred imitation and realization by oneself of the falling contour in declarative and imperative utterances,
  - c) Imitation, deferred imitation and realization by oneself of the constant intonation contour in unfinished utterances and in statements and in utterance components that require continuation,
- Realization of intonation in dialogue behaviors, e.g. in pairs: question – answer,
- Expression of intonation in accordance with the therapist's instructions, appropriate for the intention of realizing a specific type of utterance (e.g. ask, order, inform),
- Reading out a text with the realization of intonation appropriate for types of utterances and individual particular punctuation marks that end them,
- Realization of intonation – initially assisted by the therapist's instructions, and then by oneself, appropriate for the semantic content and grammatical structure,
- Realization of intonation in phrases and longer utterances reproduced from memory and constructed in the interaction with the therapist, while constructing a dialog and narrative utterances.

### **Phrasal stress expression exercises**

Their overriding goal is for the patient to achieve the ability to use phrasal stress in speech – perceptually distinct and appropriate for the semantic content of an utterance and its intention. In the course of executing these exercises, it can be helpful, especially in the initial stages, to use labels with written down utterances to be realized, in which words under phrasal stress are graphically highlighted. The exercises in this group utilize the following activities:

- Imitation, deferred imitation and realization by oneself of phrasal stress in a dialogue, in the pairs of: question about the rheme – answer (the patient answers each question while realizing the same utterance and preserving the same order, e.g. *W lipcu wyjeżdżam z rodziną nad morze* [In July I'm going to the seaside with my family] but stressing a different part of it each time, appropriately to the question asked by the therapist e.g. *Kiedy*

*wyjeżdżasz z rodziną nad morze?* [When are you going to the seaside with your family?] *Dokąd wyjeżdżasz w lipcu z rodziną?* [Where are you going with your family in July?"]),

- Imitation, deferred imitation and realization by oneself of phrasal (sentence)<sup>4</sup> stress in phrases, taking into account their thematic-rhematic structure (the patient's task is then to emphasize the utterance fragment containing an item of information that is new to the listener); when executing this task, it is necessary to determine what information both the sender and the listener have prior to the production of the message by the sender,
- Imitation, deferred imitation and realization by oneself of logical stress in phrases, emphasizing any utterance fragment containing the most important information from the sender's standpoint,
- Realization of phrasal stress in texts read out and reproduced from memory and in narrative utterances.

### **Exercises to express tempo**

The goal of the exercises in this group is to develop the realization of the speech sequence in moderate tempo enabling the receiver to effectively perceive it, and the ability to vary the tempo depending on the semantic content of a message (e.g. slow down the tempo to express more important information items than others), the receiver's perceptual capability or on the sender's intentions. The exercises develop the following skills:

- Imitation of read-out phrases and longer texts in moderate tempo, taking account of pauses; the place and length of pauses is marked by punctuation marks in the text, possibly by additional conventional signs facilitating the reception of its semantic structure (e.g. signaling inversion) or palced before the phrasal stress to focus the receiver's attention,
- Vocal realization by oneself of phrases and texts read out and delivered in moderate tempo, taking the above mentioned pauses into consideration,
- Imitation and vocal realization by oneself of utterances in the tempo modified by the speaker because of the receiver's abilities (e.g. slowing down the tempo in the speech addressed to a child) or by the specificity of a communicative situation (e.g. telephone conversation with interferences or in noise),
- Imitation and vocal realization by oneself of utterances in the tempo modified by the speaker because of emotions accompanying the sender's message (slowing down the tempo in utterances marked with sadness or speeding it up in utterances marked with joy),

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<sup>4</sup> Division into logical and stress sentence adopted after Maria Dłuska (1976).

- Imitation and realization by oneself of phrases and longer texts taking account of the level of information importance of their individual fragments (important information is realized in a slower tempo, less important – in faster tempo).

### **Emotional prosody expression exercises**

The purpose of this group of exercises is to develop the abilities associated with expression of emotions. These skills allow the speaker to manifest his/her emotional attitude to the content of his/her utterance, its receiver or to the communicative situation. They also enable him/her to modify the meaning of the message depending on his/her intentions, e.g. by realizing prosodic features characteristic of sarcasm. In the early stage of work with the patients, tasks should use the connections between a specific emotional markedness and the semantic content of utterances, to finally achieve the level at which the patient realizes emotional prosody regardless of their meaning. To produce prosodic emotional markedness, different prosodic features and various phenomena are used which are the result of changes of these features over time, that is why emotional prosody expression exercises are placed at the end of the program.

These exercises develop the following abilities:

- Imitation of utterances with specific prosodic emotional markedness, initially with the possibility of controlling the therapist's facial expressions and body language and the use of context defined by the therapist e.g. „*zgubiłem swój ulubiony zegarek, więc jestem smutny* [I've lost my favorite watch, that's why I am sad]”, and then with the gradual reduction of additional information, and finally, with the exclusive use of phonic information,
- Social/linguistic role-playing in drama scenes (adjustment of prosodic realizations to specific communicative situations e.g. a quarrel between two friends, greeting a long-awaited guest), from realizations using ready-made linguistic material to utterances one's own,
- Realization of utterances, initially assisted by the therapist's instructions and then on one's own, with specific emotional markedness, with the possible imitation and use of one's own facial expression and gestures, and then without it (from basic emotions: fear, anger, sadness, joy, disgust, and surprise to derivative emotions: e.g. disillusion, repentance, contempt, pride, sense of guilt, anxiety, and revulsion),
- Realization of utterances with appropriate prosodic markedness in response to the facial expression, presented by therapist or in illustrations, characteristic of a given emotion,
- Realization of utterances with appropriate prosodic markedness in response to the name emotion given or read out by the therapist,



- Combination of realizations by oneself of utterances marked by individual emotions with the material presenting facial expressions characteristic of a given emotion or its name, ,
- Reading out text fragments with specific emotional markedness ,
- Reproduction from memory of text fragments with specific emotional markedness.

## CONCLUSION

Disorders in expression skills reduce the possibility of realizing its linguistic, paralinguistic and ekstralinguistic functions, thereby making effective communication difficult. Work on enhancing prosodic skills is facilitated by the application of specific therapy programs, which help organize the methodology of therapeutic management.

The authors' therapy program described in the present article takes into account the functions crucial to improving speech prosody expression. It consists of three basic stages. In stage one, exercises are done to realize individual features of speech sounds, stage two is devoted to prosody expression in speech, stage three – to the realization of prosodic functions. The program can be used in various areas of logopedic measures: first of all in the treatment of of patients with prosodic disorders but also in supporting the development of prosodic skills in children and in developing these skills in professional/public speakers or in foreigners learning Polish.

In addition to speech signals, the program also utilizes singing, whose efficacy in prosodic rehabilitation has been confirmed in many publications referred to in this article. In order to involve perception, including auditory, visual and kinesthetic self-control of the exercising patients, various techniques are used such as inter alia depicting the features of prosodic structures, exaggerating or diminishing their intensity, auditory, visual, and kinesthetic instructions, deferred repetition, use of feedback information, singing, accompaniment and gross motor skills, gradual increase in the number of elements of structures, speaking together, and drama techniques (cf. a survey of techniques in: Wysocka, Kwaterkiewicz 2018).

We hope that the presented program will be helpful in logopedic practice (owing to a diversity of the methodological solutions and exercises applied and to taking account of many skills determining the correct use of prosody in communication) – it will be conducive to systematizing therapeutic measures and will increase their effectiveness.

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