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# MUSIC THERAPY IN THE REHABILITATION OF A STROKE PATIENT

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## SUMMARY

**Background:**

In addition to motor and cognitive rehabilitation, stroke patients often require assistance with emotional adaptation to their changed situation. Music therapy can constitute a significant therapeutic modality for these patients. The goal of my research was to identify the impact of my own program of individual music therapy on mood, anxiety, emotional control, acceptance of illness, coping style, and other parameters of health psychology.

**Case description:**

This article describes a 50-year-old female patient, who had suffered an eschemic right hemisphere stroke, and was undergoing in-patient rehabilitation. She took part in 10 sessions of individual music therapy, intended not only to improve her mood, but also to help her accept her illness and cope with pain, strengthen her feeling of control over her own health, identify her feelings, and deal with difficult emotions more effectively. Tests and questionnaires from the field of health psychology were filled out by the patient before and after participation in the program.

**Results:**

Music therapy significantly elevated her mood, reduced her anxiety and suppression of negative emotions, and increased her acceptance of the illness. Most importantly, while listening to music she experienced movement in the previously hemiplegic arm.

**Conclusions:**

Music therapy can be broadly applied to improve the emotional state of patients in rehabilitation, supplementing other kinds of psychological help. Further research on a large group of patients is indicated in order to determine whether listening to music can evoke movement in hemiparetic limbs.

**Key words:** stroke, hemiplegia, mental health, life satisfaction

## INTRODUCTION

A stroke is a sudden event that exerts an enormous impact on the daily functioning of the patients, who suddenly experience both motor and cognitive disability. The normal course of life undergoes a cesura, which generates many difficult emotions. In addition to pharmacological treatment and the rehabilitation of motor and cognitive functions, these patients require help in emotional adaptation to this new and unwanted situation.

A review of the literature on neurological rehabilitation (Pačhalska, 2008; Pri-gatano, 2009; Łukasik & Kozubski, 2007; Baker & Tamplin, 2006; Pačhalska & Ziółkowska 2011; Pačhalska & Kaczmarek 2012; Mielnik & Mielnik-Matityahu, 2013), along with my own experience in therapy with stroke patients, has pinpointed the main emotional problems and needs of patients, who as a result of damage to the central nervous system have suddenly become disabled. They often display a significantly depressed mood or apathy; they experience considerable anxiety, especially concerning the future; they have difficulty in accepting their illness and its consequences; they cannot cope with pain or the feeling of loss of control over their own lives and the necessity of becoming dependent on others. They are also inclined to suppress or repress difficult emotions associated with the illness, developing a defense mechanism based on an unrealistic optimism. In many cases, their emotional functioning is also adversely affected by damage to the structures of the limbic system, producing inappropriate emotional reactions, such as involuntary crying or laughing, euphoria, or depression (Pačhalska 1999).

Not infrequently the mental state of neurological patients is also affected by the features of their premorbid personality and the manifestation of earlier attitudes or behavioral schemata, internal conflicts, or emotional needs that have not been met for many years. The support – or lack of support – the patients receive from their immediate surroundings is also very important. For their part, friends and relatives experience considerable anxiety regarding the patient's health, as well as their own future, which may well involve the necessity to assume responsibility for care of the patient. The subject of the stroke and the difficult future becomes tabu. Some begin to treat the patient like a child, displaying overprotectiveness and “doing for” behavior, forcing them deeper into dependency, which in some patients produces rebellion and anger, and in others a gradual acceptance of the role of permanent patient. Such an attitude does not motivate the patient to rehabilitation, but rather supports passivity (Seniów et al., 2007). Many families do not understand the patient's limitations resulting from the stroke, whether motor or cognitive, and place impossible demands on the patient. All of this produces significant changes in interpersonal relationships (Łapkiewicz et al., 2008).

In this very difficult situation, patients require not only motor rehabilitation, but also the work of an entire therapeutic team, including a physician, a physiotherapist, a nurse, a psychologist, an occupational therapist, and often a speech

therapist as well. The importance of the holistic approach to rehabilitation is often stressed in the literature (Oszwa, 2009). The cooperation of the team members guarantees a broader range of patient care and a quicker return to greater functionality, or even full recovery. Music therapy can play an important role here. That is why the author has developed a program of individual music therapy, primarily psychotherapeutic, psychoprophylactic, and psychoeducational, with a particular focus on emotional adaptation to the stroke and its consequences.

## **MUSIC THERAPY IN NEUROLOGICAL REHABILITATION**

According to the definition accepted by the World Federation of Music Therapists, “music therapy is the use of music and/or its elements by the music therapist and the patient/client or group in a process designed to facilitate communication, learning, mobilization, expression, and physical, emotional, intellectual, and cognitive concentration, in order to develop inner potential and to develop or rebuild the individual’s function in such a way that they may be able to achieve better intra- and interpersonal integration, and as a result to improve the quality of life” (Szulc, 2005, p. 17).

The application of music therapy in neurological rehabilitation is still more an exception than a rule. In Poland, the therapeutic team consists of a physician, a physiotherapist and a nurse, as well as an occupational therapist, a speech therapist, and a psychologist, but not a music therapist. The use of elements of music therapy occurs only incidentally. However, as demonstrated by the results from the reported experience of music therapists around the world (Baker & Tamplin, 2006; Thaut, 1999; Mielnik & Mielnik-Matityahu, 2013), as well as my own observations, music therapy in neurorehabilitation can fulfill an essential role in support of basic treatment. Music therapy provides a range of possibilities to affect the patient, during both motor and cognitive rehabilitation. It can also be of particular importance in psychotherapy, to support emotional adaptation to illness and disability, and also, in the case of group music therapy, to build social bonds and a supportive atmosphere during the difficult period of rehabilitation.

In the literature since the 1980s there have been reports of the results of music therapy in neurological rehabilitation (such as singing familiar songs or group improvisation), in the therapy of children (Kennelly, 2001, cited by Baker & Tamplin, 2006; Mielnik & Mielnik-Matityahu, 2013), adults in coma or post-traumatic amnesia (Aldridge, 1990; Gilbertson, 1999; Tamplin, 2000; cited by Baker & Tamplin, 2006), or disturbances of speech tempo, articulation, or intonation (Cohen & Mass, 1993; Tamplin, 2005, cited by Baker & Tamplin, 2006). There has also been research on the application of rhythmic auditory stimulation (RAS) in physiotherapy and during gait training (Thaut, 1997; Hurt, 1998; Paul & Ramsey, 2000, cited by Baker & Tamplin, 2006), as well as the use of musical training in cognitive disturbances (Wit, 1994; Baker, 2005a, cited by Baker & Tamplin, 2006). Baker (2005, cited by Baker & Tamplin, 2006) has also described the positive effect

on brain-damaged patients' emotions of writing songs and improvising in order to work through the trauma, gain insight into one's own feelings, cope with ongoing problems in rehabilitation, and develop a more optimistic view of the future.

The goal of my research was to determine the impact of a cycle of ten individual music therapy sessions on selected aspects of the mental functioning of a female stroke patient.

## **METHODS**

The following research questions were formulated:

1. Does participation in individual music therapy have a short-term effect of improving the patient's mood?
2. Does individual music therapy affect such aspects of mental functioning as the level of anxiety, the stifling of emotions, the acceptance of the disease, the style of coping with stressful situations, the feeling of one's own effectiveness, the locus of control over health, beliefs regarding pain control and methods of coping, and life satisfaction.

The following research instruments were used to measure these aspects of mental functioning:

3. The State-Trait Anxiety Index (Spielberger, Strelau, Tysarczyk & Wrześniewski, 1987), consisting of two scales measuring two types of anxiety: anxiety as a state (X-1 scale), i.e. the anxiety felt in a given moment, and anxiety as a trait (X-2 scale), i.e. a relatively stable tendency to perceive objectively non-dangerous situations as very dangerous. The higher the score, the higher the level of anxiety. Persons with a high level of trait anxiety do not necessarily always present a high level of state anxiety, but they will tend to react with strong anxiety in difficult situations.
4. The Courtauld Emotional Control Scale (CECS; Watson & Greer, 1983, Polish adaptation by Juczyński), which contains 21 statements associated with the display of anger, depression, and anxiety. The higher the score, the greater the subject's tendency to suppress these emotions. The suppression of the expression of emotions can contribute to their intensification, and thus to the persistence of emotional tension. One consequence of this can be neurosis and psychosomatic illness. In particular, restraining anger and bitterness correlates with increased pulse, hypertension, and coronary artery disease (Baumeister, Heatherton & Tice, 2000, cited by Juczyński, 2009).
5. The Acceptance of Illness Scale (AIS; Felton, Revenson & Hinrichsen, 1984, Polish adaptation by Juczyński), containing eight statements regarding the negative consequences of the illness, such as the limitations imposed by poor health, the lack of self-sufficiency, the feeling of dependency on others, and a diminished sense of one's own value. A low score indicates a lack of acceptance of illness and a strong feeling of mental discomfort. The greater the acceptance of illness, the better the emotional adaptation, which has a major impact on quality of life.

6. The Coping in Stressful Situations Scale (CISS; Endler & Parker, 1999; Polish adaptation by Strelau, Jaworowska, Wrześniewski and Szczepaniak), which examines the style of coping with stress, that is, a relatively stable inclination to a particular way of dealing with stress. It contains 48 statements associated with various kinds of behavior in stressful situations, grouped into three scales: “task oriented coping,” i.e. making an effort to solve the problem by rethinking or trying to change the situation; “emotion-oriented coping,” characterized by a tendency to concentrate on oneself, on one’s own feelings, on emotional tension, anger, or anxiety; and “avoidance-oriented coping,” which involves the attempt to escape from thinking and experiencing stress by engaging in substitute activities or seeking out social contacts.
7. The Generalized Self-Efficacy scale (GSE; Schwarzer & Jerusalem, 1995, Polish adaptation by Juczyński), which is associated with the concept of expectations and the feeling of self-efficacy, formulated in 1977 by Bandura. This scale consists of 12 statements measuring the strength of the subject’s belief in their own efficacy in dealing with difficult situations. This belief is associated with high self-esteem, self-acceptance, and an optimistic attitude, which is why an indication of the feeling of self-efficacy can be a good predictor of health behavior.
8. The List of Health Criteria (LKZ, developed in Polish by Juczyński), which refers to the holistic approach to health. The test consists of 24 statements about various positive dimensions of physical, mental, and social health. The subject indicates which of these statements are in their opinion important in the evaluation of health; the subject then chooses five of them and arranges them in a hierarchy of importance. The interpretation takes into account the weight ascribed to the particular criteria and definitional properties regarding the description of health as a state, a result, a property, or a process.
9. Multidimensional Health Locus of Control scales (MHLC; Wallston, Wallston & DeVellis, 1978, Polish adaptation by Juczyński), which consists of 18 statements concerning generalized expectations in three dimensions of health locus of control: internality, meaning that control over my health depends on me; “powerful others” externality, i.e. other people are in charge of the state of my health; and “chance” externality, i.e. my health results from chance or other external factors. The higher the score in a given scale, the greater the certainty that this factor affects the state of health. Internality makes the greatest contribution to pro-health behavior.
10. Beliefs About Pain Control Questionnaire (BPCQ; Skevington, 1990; Polish adaptation by Juczyński), which contains 13 statements associated with three factors measuring the strength of the individual’s beliefs about pain control: personally (internal factors), impact of the physician (force of others), and chance events. Pain is a feeling that involves both sensory factors and affective-reactive factors, determined somatically and by psychological or social factors. The feeling of the locus of pain control is especially associated with psychological factors.

11. The Coping Strategy Questionnaire (CSQ; Rosenstiel & Keefe, 1983, Polish adaptation by Juczyński), which uses 42 statements to measure ways of coping with pain: the behavioral strategy (increased activity) and six cognitive strategies, i.e. diverting attention, re-interpreting, catastrophizing, ignoring, praying and hoping, and coping self statements.
12. The MPQ Wellbeing Scale is part of the Multidimensional Personality Questionnaire (MPQ; Tellegen & Walker, 1994), and contains 18 statements regarding beliefs about satisfaction with one's own life. The subject answers by specifying whether a given statement is true or false in reference to themselves.
13. The Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985), which consists of five statements pertaining to satisfaction with one's own life. The patient's task is to reply to these statements on a seven-point scale.
14. The Pre-Session Mood Scale, the author's own five-point scale of mood, created for the present study, in which the patient specifies the level of joy, unease, anger, and energy currently experienced before each individual music therapy session.
15. The Post-Session Mood Scale, filled out immediately after participation in each music therapy session. As in the Pre-Session Mood Scale, the patient's task is to specify on a five-point scale the level of joy, unease, anger, and energy currently experienced after each individual music therapy session. It is also supplemented by an incomplete sentence: "Right now I feel..., because...".

After the patient had been invited to participate in this research project and had given informed consent, her first task (baseline) was to fill out the questionnaires and psychological scales specifying the level of selected aspects of mental functioning (pre-test). Then, for a period of three weeks, she participated in ten sessions of individual music therapy, conducted approximately three to four times a week. Before and after each session she indicated her mood on a five-point scale. After she had completed the entire music therapy program, the patient was asked to fill out again the same questionnaires and scales she had completed before entering the program (re-test). The music therapy was conducted in a psychological office equipped with sound equipment, an Orff instrument set, a guitar, and a keyboard.

The program of individual music therapy included ten sessions of similar course. The repetitive scheme of the particular sessions, with the stages following one another in a predictable series, was intended to create a secure atmosphere.

The more detailed goals of the music therapy program were concentrated on achieving short-term effects, in the form of improvement of the patient's current mood, increased feelings of joy and the level of energy, musical activation, and reduced feelings of anxiety and anger. The long term effects included a greater degree of acceptance of illness and coping with pain, reinforcement of

an internal feeling of control over one's own health through active rehabilitation and prevention of a recurrence of the stroke, becoming aware of her own emotions, and better coping with difficult emotions, as well as identifying her own role in social relationships and functioning normally within them.

Each music therapy session consisted of three parts:

1. an introduction, which comprised specifying her current mood and breathing exercises conducted to music or using the voice;
2. the main part, which involved realizing the primary theme with music, a psychological conversation, and psychoeducational or psychotherapeutic activities, as well as music therapy exercises;
3. a conclusion, which included relaxation to music, a summation, and an indication of the patient's mood immediately after the session.

The program contains elements of both receptive and active music therapy. It uses projection (free associations, directed imagination in the realization of concrete themes, and incomplete sentences), communication (through three forms of expression: using instruments in instrumental dialogs, using movement to mirror gestures and motor improvisations, and using the voice in singing), and relaxation (muscle relaxation training, especially focusing on the hemiparetic limbs with a tendency to spasticity, and visualizations to music).

The themes suggested for successive sessions were chosen on the basis of my own therapeutic experience with stroke patients. Familiarity with the main problems with which these patients must deal and the needs of disabled persons has made it possible to identify the most important topics to be realized during individual music therapy. It should be emphasized that the patient described here was already at the stage of rehabilitation, and thus several weeks after the stroke, rather than immediately after. This made it possible to do therapeutic work at a deeper level.

The themes were carried out in a preliminary session (session 1: "Music and me") and then grouped in four cycles. The first cycle - dealing with illness - included three sessions: session 2, "My body"; session 3, "Pain"; and session 4, "Weakness and strength." This cycle was intended to reveal thoughts and feelings associated with illness, limitations, pain, and the feeling of lack of strength or inability to tolerate one's own physical or mental weakness, and later on, greater acceptance of illness and a higher degree of motivation and internal feeling of control during recovery. The second cycle, dealing with emotion, also contained three sessions: session 5, "Anxiety," session 6, "Anger," and session 7, "From sadness to joy." The essence of these sessions was to identify the difficult emotions that were being felt or repressed, not only in the context of illness, but also in the patient's entire life, to become aware of their role in mental and social functioning, to develop the ability to accept and express them, and to learn strategies for coping with them. The third cycle, interpersonal relations, was composed of two sessions: session 8, "Dialog in music - dialog in life," and session 9, "Experiencing intimacy." This cycle was created to analyze the types of interpersonal relationships in the patient's life, to become aware of the way of communicating

with family and friends, to expand the patient's knowledge regarding non-verbal communication and its role in feeling emotional intimacy, and to develop assertive behavior. The last session, "My future," was intended to inspire the patient with optimism, to sum up what have been achieved so far, and to set realistic goals for the future.

## **CASE STUDY**

### **Medical and social information**

Patient MR, a 50-year-old female, was admitted to the Department of Neurological Rehabilitation for left hemiparesis, the result of an ischemic stroke to the right hemisphere. In addition, the patient suffers from hypertension, and two years earlier had been diagnosed with conversive-depressive disorders, for which reason she had been hospitalized in the psychiatric department for a month. Since that time she has been taking anti-depressive medication.

MR is married, and has two adult sons and one grandson. She has been unemployed for two years. She is artistically talented, a photographer by education and passion.

In neurological evaluation she was found to have hemiplegia with low muscle tonus in the left upper limb and hemiparesis in the left lower limb, along with paresis of the seventh cranial nerve, producing slight distortion of speech and difficulties with eating and drinking. As far as functioning is concerned, the patient was able to sit unassisted and without support, and could stand and walk with the help of one person or an elbow crutch. Her gait was abnormal. In activities of daily living, MR was largely independent, due to her right-handedness. A rehabilitation plan was developed for her, which included individualized motor exercises, occupational therapy, speech therapy, and psychological care.

At present she does not display conversive-depressive symptoms, although her mood at admission was very depressed. She displayed no abnormalities in respect to cognitive and executive functions.

### **Pre-test results**

Before MR began the program of individual music therapy, she achieved the following results in the questionnaires:

According to the results of the STAI, the patient was experiencing higher than normal levels of anxiety, both in general and at present (X-1 and X-2 in the 70th percentile), while her stifling of negative emotions, such as anxiety and depression, was at an average level. Her score for anger control was high, which means that MR suppressed or repressed her anger to a great degree.

In terms of coping style, her scores for task-oriented, avoidance-oriented, and emotion-oriented coping were in the normal range: SSZ in the 50th percentile, SSU in the 50th percentile, and SSE in the 60th percentile). Involvement in substitute activities could be regarded as rare (40th percentile), while searching for

social contacts was on an average level (60th percentile).

Her feeling of self-efficacy was average on the GSE scale, a result which was confirmed by the low level of the feeling of control over her own health, while the health locus of control was more strongly expressed in external factors, such as the role of chance and other people (as measured by the MHLC scale). The same can be said of her feeling of influence over pain: the patient regarded the role of both internal and external factors as low, while the role of chance was average, which can be regarded as the undifferentiated weak type (as measured by the BPCQ).

In coping with pain, the patient appealed primarily to prayer, and also very frequently applied the strategy of re-interpreting pain. She was less likely to use the strategies of diverting attention from pain, ignoring it or making coping statements. She was least likely, in her own opinion, to employ catastrophizing or increased activity. The feeling of having influence on pain or the possibility of reducing it independently was average to low.

The hierarchy of importance of the various criteria for health created by the patient assumes that the most essential thing was to have work and diversified interests, followed by being able to work without pressure and stress, and finally to be able to adapt to changes in life, not to be ill (except for the occasional cold or indigestion), and to maintain an appropriate weight.

MR declared that she was very satisfied with her life to date (the Satisfaction with Life scale), but at the time of testing she had a low score in the MPQ Well-being scale.

### **The course of individual music therapy**

When the first music therapy sessions began, the patient displayed a high level of tension. I had the impression that she was overly intent on creating a positive image of herself and was afraid of any kind of evaluation from me. She carefully controlled everything she said and did. However as the sessions proceeded she gradually relaxed, and as time went on she showed an increasing degree of openness and trust, although she was always concerned to do the best job she could on her exercises. She came to the sessions motivated to work on her problems. She also stated that she regretted the fact that during the period in her life when she had been depressed, she could not participate in this kind of therapy.

In order to provide a sense of how the sessions went, some of the patient's statements have been quoted below. These were associations she had with the music to which she was listening, which were then discussed and analyzed in the context of MR's life and the information obtained from her throughout the entire course of music therapy.

Session number 1: Introduction, "Music and me".

Selection 1: "a ballerina dancing in an auditorium; for me this piece connotes youth, health, beauty."

Selection 2: "I have an association with a burning forest, and then a walk among the ashes, here and there grass is growing; I felt horror, and then sadness."

Selection 3: "Seagulls on the beach; they run into the wave and back, they don't fly, a sort of light struggle with the water; I feel cheerfulness, pleasure."

Session number 2: "My body"

Selection 1: "I feel longing for the past, for my body in movement, dancing on the meadow; I am trying to accept my body, now after the stroke I'm not rejecting my paralyzed limbs, I want to treat them as friends."

Selection 2: "Please, body, couldn't you just dance and turn around in a circle."

Selection 3: "I am sorry, body, that I didn't regularly measure my blood pressure, that I was sitting at work for many hours without moving, on an uncomfortable chair, in front of the computer."

Selection 4: "I thank my body for not giving up during my illness."

Session number 3: "My pain"

Selection: "I treat pain as a signal from my body; I have always, for my whole life, felt painful tension in my body."

Session number 4: "Weakness and strength"

Selection 1: "A bunch of ants pulling something very heavy to the anthill; it was too much for them, but they managed; so small, and yet so strong."

Selection 2: "A landscape full of peace; a strong person is someone who can meet a lot of challenges, while a weak person is one who doesn't try, gives up without fighting or making an effort."

Session number 5: "Anxiety"

Selection: "I'm afraid of the road from my garden gate to the bus stop. How will I make it? I'm afraid of the future; I feel anxiety about my motor limitations; I'm afraid of stairs, that I won't manage; I'm afraid of loneliness, too, and the death of family and friends."

Session number 6: "Anger"

(The patient was asked to imagine a monster, and to try to answer the question whether that monster had any positive characteristics, and to find the motives for its actions.)

Selection: "I see in my imagination a shark, which is swimming beautifully, but it behaves aggressively only when it is hungry; it does wrong because of hunger. Does it have any positive features? It swims beautifully...; the monster in me is the desire to possess things, always wanting more, and doing everything the best. I was never content with beautiful swimming, but I want more; when I get angry, I yell at my family and friends."

Session number 7: "From sadness to joy"

Selection 1: "I feel a lot of sadness, perhaps because of some separation, somebody's death."

Selection 2: "A beautiful meadow, full of butterflies, such a pleasant, lazy, joyful day in nature; can I try to dance to this? I'm curious if I would be able to move in a circle" (the patient stood up and with my support began to dance in a circle, turning around slowly, which gave her great joy).

Session number 8: "Dialog in the music – dialog in life"

Selection 1: "A conversation with a customer, a polite conversation, but this customer is a little tiresome; I used to have conversations like that, when I worked in the photography studio."

Selection 2: "A little quarrel between a man and a woman."

Selection 3: "Interfering, an attempt to force somebody onto his own side, sort of manipulation."

Selection 4: "Two men are bickering, each of them wants to win; they don't have a good relationship; would I like to improve any relationship?" (sudden weeping) "I have a terrible relationship with my brother."

Session number 9: "Experiencing closeness"

Selection: "I felt close to my grandson, and to my husband."

Session number 10: "My future"

Selection: "I listened to this music with a strong feeling that I will make it, that I am support for myself, I want to go to the mountains, I want to paint; my friend and I will make a display of our pictures; I want to take care of my grandson again; I want to take up Nordic walking."

It can be inferred from the foregoing quotations and many other conversations with her that work had always played a very large role in MR's life. The frequent references to work while listening to music and the fact that she regarded being able to work as the most important criterion of health on the LKZ scale may indicate that her involvement in work was somewhat excessive (the patient herself freely admitted to that). It was precisely with the loss of her job that the patient associates the appearance of depression two years ago, though I tried to convince her during later sessions that there were other factors that had also affected her mental state at that time.

Without a doubt her job had brought her great satisfaction, if only because she was doing what she always liked to do. However, it was also a source of constant reinforcement of the feeling of her own value and realization of her central, though previously deeply hidden need to be the best, manifesting in a strong attitude of perfectionism. The patient expressed this in one of her utterances during Session number 6, when she referred the "monster in herself" to the fact that she "constantly wanted more and to do everything the best." It turned out that throughout her life she had demanded more from herself, without acknowledging any right to weakness. She was seldom satisfied with herself or the results of her work. During music therapy she discovered that it was precisely her extreme perfectionism which had brought upon her the enormous tension with which she had been straggling for years. As she stated, she was able to spend more than ten hours straight in front of the computer, working on processing a photograph in various programs, never content with the results. The reduced efficiency of her work caused an anxiety of which she was unaware. Because of the loss of her job, MR had lost the possibility of confirming her excellence and further aspiration to perfection, which certainly, in connection with the feeling of

rejection that she was experiencing (since she had been fired by a good friend), brought about a major crisis, resulting in conversive-depressive disturbances.

During the analysis of this problem, it turned out that perfectionism had always been part of her character, since early childhood, but it had not previously produced such a strong desire to be the best. An explanation of this was provided by Session 8, when the instrumental dialogs in the music led her to reveal the problem of a long standing lack of dialog and contact with her brother. There suddenly appeared bitter and difficult memories from childhood, which shed new light on the attitude she had displayed. MR grew up as the youngest child in a family in which there was no intimacy between the parents. Her mother strongly favored the older son, whom she had named after the man who had been the great love of her life (already before her marriage, which was not revealed until after her death, and had previously constituted a family secret). Her brother had learned to take advantage of their mother's favoritism. By manipulating her in the right way, he could get anything he wanted. MR had always felt inferior and unfairly treated. When at the age of 7 she had spent a month in the hospital with the suspicion of cancer of the digestive tract, her parents did not consent to visit their daughter. However, they did not explain to her the reasons why they could not come to her. During music therapy, the patient recalled her emotions from that period. She felt very lonely and rejected by her closest family. She also felt a justified anxiety about her health, but the diagnosis was kept secret from her. This experience probably strengthened the trauma, leading to a strong feeling of being rejected and inferior. The creation of an attitude of perfectionism from the moment of her return from the hospital constituted the only way she had at the time to arouse positive interest and acceptance from her parents. However, as far as scholastic achievements were concerned, she was also unable to keep up with her brother, who at home was always definitely in first place, also in respect to grades at school. Ever since that time, her relationship with her brother had always been characterized by rivalry, especially for their mother's attention. When it turned out after her mother's death, which had taken place two and a half years before MR's stroke, that she had left her entire estate to her son, the patient began to experience conversive-depressive symptoms, which, taken together with the loss of her job, finally led to her hospitalization in a psychiatric ward.

The insight obtained by the patient, the expression of long hidden emotions, and the therapeutic interventions led to a catharsis. "I feel free now, because I have analyzed my relationship with my brother and my late mother." She stated this with joy on her face, from which all the tension and previous stiffness seemed to have disappeared.

There was another reason why music therapy played an enormous role in the present situation of the patient. Towards the end of the first session, in accordance with the program, I proposed relaxation to music, directing the patient's attention to particular parts of her body, with the suggestion of improving blood supply and relaxation, especially in the hemiparetic limbs. MR, who had had no previous experience with relaxation exercises, listened to the music and to my

instructions, at first rather doubtfully, and then with more and more peace and relaxation. At the moment when she was being instructed to deeply relax the hemiparetic upper limb, the paralyzed arm suddenly moved. MR looked at her hand in surprise, and suddenly the entire arm began to move freely. There was some concern that this was only a short term effect resulting from deep relaxation of the muscle; however, the motor capacity of the arm was not only maintained, but from that moment on increased on a daily basis. I suspect that this became the reason for MR's great involvement in the entire program of music therapy and the rapid increase in her trust towards the exercises proposed, especially relaxation exercises.

Other interesting themes also appeared in the patient's comments to the music, especially associated with her current disability. She showed a longing for health, youth, and beauty, as shown by her imagination of dancing ballerinas, and fear and sadness associated with her illness. Her projection of this was displayed when she imagined a burning forest and a walk among the ashes. One optimistic element of this picture was the grass growing here and there, which could be a symbol of hope. Towards the end of Session 2 ("My body"), the patient regarded as valuable the fact that she had thought a great deal about her body and what it needed. One can only hope that her conclusions about greater care for the realization of bodily needs (for example, necessary rest and movement) will pay off in the future. The same thing may happen with her beliefs about pain. MR stated, "What was important for me during the session on pain was the discovery that by changing my thinking I could influence the pain. It's too bad that I didn't know about this earlier, when the pain was very bad."

In the context of her previous denial of any right to weakness, it is interesting to note her comment summing up Session 4 ("Strength and weakness"): "Strength and weakness can coexist, one should take care to maintain a balance between them - this for me was important today." She also made a number of remarks regarding anger, the suppressed expression of which had been indicated by a single stroke on a drum, showing excessive stifling of anger: "I realized today that I have a right to anger, that anger gives me a signal that someone has crossed my boundaries. I want to take care of my inner territory."

Regarding the impact of music therapy on MR, a summation can be found in her response when she was asked what had been especially important to her in the entire program of music therapy: "What was valuable for me was becoming aware of my emotions, the possibility of talking about them and expressing them in various strange ways [smile]. The session about my relationship with my brother and mother was very important for me, but especially the relaxation exercises, during which my paralyzed hand began to move."

### **The short-term effects of music therapy**

An analysis of the average points obtained by MR on the mood scale before and after 10 sessions of individual music therapy indicates that the primary hy-

Table 1. An analysis of the average points obtained by MR on the mood scale before and after 10 sessions of individual music therapy

Factor	Average points of 10 meetings on a scale of 1 to 5 obtained in the Mood Scale before the therapy	Average points of 10 meetings on a scale of 1 to 5 obtained in the Mood Scale after the therapy
Joy	3,5	4,4
Anxiety	2,6	2,1
Anger	1,3	1,0
The energy level	3,2	3,6

pothesis, that her mood would be improved by her participation in music therapy, was confirmed. The results are shown in table 1.

The largest increase, 0.9 points, was observed on the scale of joy, while there was also improvement in the level of energy (0.4 points). The hypothesis was also confirmed by the decrease in distress (from 2.6 to 2.1 points) and anger (from 1.3 to 1.0 points). The differences in the means are not significant, perhaps because MR is a person characterized by a high level of emotional control and relatively disinclined to self-expression. The large differences in mood could be an indication in her case of emotional lability.

A more detailed indication of the impact of music therapy on MR's mood has been presented below in the form of direct quotations, which in each case constitute a conclusion of the sentence, "Right now I'm feeling..., because...".

- "Right now I'm feeling just great, because my paralyzed hand began to move during music therapy."
- "Right now I'm feeling great, because I'm experiencing inner peace."
- "Right now I'm feeling regret that before, when I was in a lot of pain, I didn't have any sessions like this."
- "Right now I'm feeling calm, because I've relaxed."
- "Right now I'm feeling more joyful, because I've relaxed."
- "Right now I'm feeling stronger, because I gained faith that I'll make it."
- "Right now I'm feeling marvelous, because I'm filled with joy."
- "Right now I'm feeling free, because I've re-thought my relationship with my brother and my late mother."
- "Right now I'm feeling marvelous, because I'm experiencing positive feelings about myself."
- "Right now I'm feeling full of positive energy, because I know I'll make it."

These quotations indicate the patient's joy due to recovery of the possibility of moving her previously paralyzed hand, which happened during music therapy; relief, the result of gaining insight; and peace, relaxation, and optimism, thanks to relaxation exercises.

### Results of the re-test

In comparison to the baseline test, the results obtained after completion of individual music therapy indicate a much lower level of anxiety as state (a decrease

of two deciles in the STAI questionnaire, X-1, from the 70th percentile to the 50th percentile). The degree of stifling of negative emotions also fell from average to low (on the CECS), also in respect to the stifling of anger, which points to a reduced tendency to suppress anger, sadness, and anxiety, and a greater tendency to reveal these emotions. The level of acceptance of illness also rose from low to high on the AIS. There appeared a change in the locus of control over health (measured by the MHLC), in that the patient now sees a greater role than before for physicians and medical personnel (an increase from average to high), which may be associated with the major role played by the entire therapeutic team in MR's success in rehabilitation.

The remaining results were unchanged. This pertains primarily to relatively stable personality traits and coping styles in the face of illness or pain, which as a general rule do not show a tendency to rapid changes.

### **Summary of the effects of music therapy**

Participation in music therapy was of great importance for MR, especially due to the spectacular success achieved during relaxation exercises in the first session, when the paralyzed upper limb began to move. It is generally known that music has the capacity to stimulate movement, especially through rhythm, but also through appropriate melody and harmony, indirectly affecting the relaxation of tension in the body.

A qualitative and quantitative analysis of the foregoing results indicates that music therapy had an impact on improving the patient's mood and increasing her acceptance of illness. The degree of anxiety and stifling of negative emotions was reduced. In the context of the patient's entire life it seemed to be significant that she was able to make herself aware of the role of anger in her life, which is reflected in the drop in the stifling of anger on the CECS. One may hope that her anger, which so far has been expressed in a manner proportional to the situation and not harmful to anyone, can still be expressed, which very likely will reduce tension in the body, and therefore also her psychosomatic symptoms.

Her awareness of the role of the entire medical staff in the improvement of her health and her gradually increasing confidence in all her therapists was reflected in the results from the MHLC, where, in the follow-up examination, she showed increased belief in the impact of other people on her health.

The mechanism of projection to music doubtless enabled her to uncover problems that were essential for her functioning, which made it possible to work on them. The resolution of long-hidden and partly unconscious inner conflicts played a significant role in her emotional adaptation to illness, which may result in optimism and a quicker recovery.

Among MR's favorite forms used during music therapy was the method of directing the imagination to music she was listening to, all breathing exercises performed with movement to the rhythm of music, and relaxation exercises. She reacted with tension to exercises using instruments, despite my assurances that we were not interested in obtaining a high level of technical proficiency. The pa-

tient's perfectionism was a hindrance in the full rejection of control over the manner of playing, which also became a subject of analysis during later sessions.

The patient's mood was probably also affected, in addition to music therapy, by the gradual improvement in her state of health, the support of her family, and perhaps also by the anti-depressive drugs she was still taking.

## **DISCUSSION**

The results obtained in this research regarding the role of music therapy in emotional adaptation to the consequences of a stroke are consistent with world literature. The research done by Baker and Wigram (2004a), Magee and Davidson (2002) and Nayak et al. (2000) has shown that participation in music therapy produces an improvement of mood in brain-damaged patients. Many different methods have been used for this purpose:

- expression of feelings through musical improvisation;
- singing and listening to songs with appropriately chosen words;
- composing songs, where both singing and improvising were significant for the reduction of anxiety, hostility, and fatigue (Magee & Davidson, 2002).

These positive changes were already observed during the first two music therapy sessions; however, for patients who are also dealing with depression, more sessions were necessary to produce a visible effect. Interestingly, Baker and Wigram (2004a) demonstrated that in patients with depression there was a worsening of mood during the first few sessions of music therapy, manifested by increased levels of sadness and anger, but over a longer period of time there were positive changes in mood, resulting from the affect of catharsis.

A large majority of world research projects use programs of group music therapy, thanks to which the patients have the opportunity to cooperate and share the emotions they are feeling. The social interactions that develop during music therapy also have a positive effect on mood (Hurt-Thaut, 2009). Individual music therapy, on the other hand, makes it possible to work more deeply on the patient's particular problems.

## **CONCLUSIONS**

Participation in music therapy seems to be significant in neurological rehabilitation as one of the elements supporting basic treatment. Music therapy certainly plays a role in improving mood, and may facilitate the process of emotional adaptation to the consequences of brain damage. Thus it may constitute a supplementary resource in the difficult period of rehabilitation.

It should be emphasized that the projection methods used in my individual music therapy program, carried out while listening to music, are less invasive than the words which are the primary instrument in psychotherapy; they also provide opportunities to work on inappropriate defense mechanisms at whatever depth the patient is ready to work at a given moment. Thus insight into the sources of one's emotional problems occurs more quickly than in traditional

counseling, and corrective action can be introduced earlier, which, due to the limited time available for rehabilitation, is of no small importance.

The fact that movement was achieved in the paralyzed limb, which took place while the patient was actively listening to music, gives grounds for hope that music could activate movement in hemiparesis, and thus facilitate and accelerate the affects of physiotherapy. Such a conclusion, however, would require further research on a large group of patients.

## REFERENCES

- Baker, F. & Tamplin, J. (2006). *Music Therapy Methods in Neurorehabilitation: A Clinician's Manual*. London & Philadelphia: Jessica Kingsley Publishers.
- Baker, F. & Wigram, T. (2004a). The immediate and long-term effects of music therapy on the mood states of people with traumatic brain injury. *British Journal of Music Therapy*, 18(2), 55-64.
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Endler, N.S. & Parker, J.D.A. (1999). *Coping Inventory for Stressful Situations (CISS): Manual (Second ed.)*. Toronto: Multi-Health Systems.
- Felton, B.J., Revenson, T.A. & Hinrichsen, G.A. (1984). Stress and coping in the explanation of psychological adjustment among chronically ill adults. *Social Science and Medicine*, 18, 889-898.
- Hurt-Thaut, C. (2009). Clinical practice in music therapy. In: S. Hallam, I. Cross & Thaut, M. (edd.). *Music Psychology*, pp. 503-514. Oxford: Oxford University Press.
- Juczyński, Z. (2009). *Narzędzia pomiaru w promocji i psychologii zdrowia*. Warsaw: Pracownia Testów Psychologicznych.
- Łapkiewicz, E., Grochmal-Bach, B., Pufal, A. & Tłokiński, W. (2008). Aphasia and changes in the quality of marital relations. *Acta Neuropsychologica*, 6(3), 237-246.
- Łukasik, M. & Kozubski, W. (2007). Depresja i inne zaburzenia psychiczne po udarze. In: A. Szczudlik, A. Członkowska, H. Kwieciński & A. Słowik (edd.), *Udar mózgu* (pp. 229-233). Cracow: Jagiellonian University Press.
- Magee, W.L. & Davidson, J.W. (2002). The effect of music therapy on mood states in neurological patients: a pilot study. *Journal of Music Therapy*, 39(1), 20-29.
- Metera, A. (2002). *Muzykoterapia. Muzyka w medycynie i edukacji*. Leszno, Poland: Wydawnictwo Centrum Techniki Nauki Metronom.
- Mielnik, M. & Mielnik-Matityahu, J. (2013). The effect of skills acquired during musical training on brain functions and the course of neurorehabilitation. *Acta Neuropsychologica* 11(1), 47-51.
- Nayak, S., Wheeler, B.L., Shiflett, S.C. & Agostinelli, S. (2000). Effect of music therapy on mood and social interaction among individuals with acute traumatic brain injury and stroke. *Rehabilitation Psychology*, 45, 274-283.
- Oszwa, U. (2009) Quality of care for patients with stroke in Great Britain. *Acta Neuropsychologica*, 7(2), 153-160.
- Pąchalska M. (1999) *Afazjologia*. Warszawa – Kraków: PWN.
- Pąchalska, M. (2008). *Rehabilitacja neuropsychologiczna*. Lublin: Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej.
- Pąchalska M., Ziółkowska M. (2011). Individual happiness in terms of process neuropsychology. *Acta Neuropsychologica* 9(1): 19-30.
- Pąchalska M., Kaczmarek B.L.J. (2012) Alexander Romanovich Łuria (1902 – 1977) and the microgenetic approach to the diagnosis and rehabilitation of TBI patients. *Acta Neuropsychologica* 10(3): 341-369.
- Prigatano, G.P. (2009). *Rehabilitacja neuropsychologiczna. Podstawowe zasady i kierunki oddziaływań terapeutycznych*. Warsaw: Wydawnictwo Naukowe PWN.
- Rosenstiel, A. K. & Keefe, F. J. (1983). The use of coping strategies in chronic low back pain patients: Relationship to patient characteristics and current adjustment. *Pain*, 17, 33-44.

- Schwarzer, R. & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In: J. Weinman, S. Wright & M. Johnston (edd.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: NFER-NELSON.
- Seniów, J., Krawczyk, M. & Członkowska, A. (2007). Rehabilitacja chorych po udarze mózgu. In: A. Szczudlik, A. Członkowska, H. Kwieciński & A. Słowik (edd.), *Udar mózgu* (pp. 275-285). Cracow: Jagiellonian University Press.
- Skevington S.M. (1990). A standardised scale to measure beliefs about controlling pain(BPCQ): a preliminary study. *Psychology & Health*, 4, 221-232.
- Spielberger, C.D., Strelau, J., Tysarczyk, M. & Wrześniewski, K. (1987). *Inwentarz Stanu i Cechy Lęku (ISCL)*. Warsaw: Pracownia Testów Psychologicznych
- Szulc, W. (2005). *Muzykoterapia jako przedmiot badań i edukacji*. Lublin: Wydawnictwo Uniwersytetu Marii Curie-Skłodowskiej.
- Tellegen, A. & Walker, N. (1994). Exploring personality through test construction: Development of the Multidimensional Personality Questionnaire. In: S.R. Briggs & J.M. Cheek (Eds.), *Personality measures: Development and evaluation* (Vol. 1, pp. 133-161). Greenwich, CT: JAI Press.
- Thaut, M. (1999). *Training Manual for Neurologic Music Therapy*. Fort Collins, Colorado: Colorado State University Center for Biomedical Research in Music.
- Wallston, K.A., Wallston, B.S. & DeVellis, R.F. (1978). Development of the Multidimensional Health Locus of Control (MHLC) scales. *Health Education Monographs*, 6, 160-170.
- Watson, M. & Greer, S. (1983). Development of a questionnaire measure of emotional control. *Journal of Psychosomatic Research*, 27(4), 299-305.

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