

SIPARI[®]: A Music Therapy Intervention for Patients Suffering With Chronic, Nonfluent Aphasia

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This article describes components of the SIPARI[®] method, a music-supported training developed to support speech rehabilitation in patients with chronic nonfluent aphasia. It is specifically descriptive of the intervention reported in the detailed case report of long-term recovery from chronic aphasia and is meant to serve as a supplement to this report. The author intends to provide readers with an overview of interventions, which have been successfully

applied in patient work for more than a decade. The efficacy of this treatment has been proven in several studies using a standardized language test. Improvements of speech performance go hand in hand with improved quality of life for patients and families alike.

Keywords: SIPARI; chronic aphasia; Broca's aphasia; global aphasia; speech rehabilitation

About 2,400 persons per 1 million inhabitants in Germany are estimated to survive a stroke each year. With a total population of 80 million, about 24,000 become impaired by aphasia as an after-effect of stroke each year; this is a high incidence rate. Up to 30% of these survivors suffer from aphasia, and about half of them will have an aphasia that will last for weeks, months, or years and sometimes for the rest of their lives (Hartje & Poeck, 2002; National Institute of Neurological Disorders and Stroke, n.d.). Aphasia impairs both the understanding and expression of language, as well as reading and writing. While categorized as a language disorder, it may be more advantageous to view the problems in patients with aphasia as a disorder of communication. It is not only the receptive difficulties of understanding that are affected but the expressive properties of language that are impaired.

It becomes difficult to speak or understand speech and equally difficult to read or write. While speech therapy is the conventional approach to treatment, music therapy may offer a broader strategy for treatment given that communication is not solely lexically dependent but is inclusive of musical foundations (Aldridge, 1989; Aldridge, Gustorff, & Hannich, 1990).

SIPARI[®]

The directed music-supported training approach (SIPARI[®]), the results of which were formerly reported (Jungblut, Suchanek, & Gerhard, 2009), is made up specifically of Singing, Intonation, Prosody, breathing (German: *Atmung*), Rhythm, and Improvisation as essential elements. It begins with activation of remaining right-hemisphere speech abilities. Mental preparation, or "inner singing" (Perry, 1994, and Perry, Zatorre, & Evans, 1995, cited in Marin & Perry, 1999), is an important training element and expands on the concept of melody (Albert, Sparks, & Helm, 1973; Sparks & Deck, 1994; Sparks, Helm, & Albert, 1974; Sparks & Holland, 1976). SIPARI[®] includes breathing exercises that encourage elementary vital processes as the basis of any vocal utterance and prepares for phonation (Loewy, 2004). In addition, the treatment

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is extended by rhythmic exercises (instrumental and/or vocal) to support phonological and segmental capabilities of the left hemisphere. Improvisations enable the patient to practice communication on a nonverbal level. In the group context, this therapy component allows the stimulation of spontaneous verbal interaction and the training of perceptive and expressive skills that form the basis of every communication.

Treatment objectives using SIPARI® include improving linguistic, motor, and cognitive functions and thereby supporting speech-motor processes and also those speech-systematic processes that encourage planning and sequencing performance. There have been few facilities in Germany that address the long-term rehabilitation of aphasia sufferers. In the late stages of rehabilitation, efforts to improve a patient's condition are tedious and often lengthy. This is why a treatment method—SIPARI®—was designed based on an impairment-related use of the human voice.

SIPARI® was developed by the author in cooperation with the Medical Faculty of the University of Witten–Herdecke. Quality control was assured by supervision by the chair of qualitative research in medicine of the University of Witten–Herdecke.

SIPARI®: Selection of Exercises

Singing: Usage of the remaining vocal resources

- ritual songs
- familiar songs (e.g., folk songs, well-known tunes)
- newly composed songs developed together with the patient
- voice training exercises (inclusive of increasing verbal and melodic complexity)
- vocal improvisations

Intonation: Focus on metric development of this right-hemispheric component

- “internal singing” (mental preparation of sound-word imaginations with given sounds accompanied by hand chimes)
- initiation of vocal sound exercises (e.g., synchronization of phonation and hand movements)
- transition exercises (smooth transitions of sounds, e.g., diphthongs)
- intonation exercises (with visualization of intonation pattern from the level of sounds to that of words or phrases)

Prosody: Development of various prosodic components, e.g., vocalization, temporal structure, melody line; focus on transition from melodic-metric to rhythmic-temporal process

- accentuation exercises (instrumental and/or vocal)
- vocalization exercises (e.g., portamento/parlando/recitative)
- group-forming exercises (instrumental and/or vocal, synchronized with external time-givers, e.g., drum)
- rhythmic singing and speaking at increasing tempo

Breathing (German: *Atmung*): Encouragement of elementary vital processes as the basis of body feeling and also of any vocal utterance, which are often impaired in patients with dysarthric accompanying symptoms

- awareness of respiration (to intensify diaphragmatic respiration)
- exercises to regulate and prolong respiration
- exercises to support articulation
- exercises to coordinate respiration and phonation

Rhythm: Development of metric and rhythmic groupings—instrumental and vocal—to support phonological and segmental abilities and promote impaired sequencing

- types of meter/changes of meter
- awareness of rests
- changes in tempo
- rhythmic alternations (instrumental/vocal turn-taking)

Improvisation: Promotion of communicative capabilities on a nonverbal level to improve cognitive functions, social abilities, and emotional stability, which are important for patients with speech impairments

- musical role plays (e.g., “taking the initiative”)
- thematic improvisations (e.g., express terms in sound)
- associative improvisations (e.g., “taking a walk,” “journey”)
- musical arrangements of texts written by the patient

Instruments

The human voice is the primary instrument employed, accompanied by hand chimes, congas, djembes, yambús (Cuban drum), Orff instruments, and piano.

Setting

Individual therapy sessions allow focus on the specific problems of the patient and specifically use unique and indicated musical components. For example, some patients may be attuned to rhythm while others' focus may be concentrated on intonational elements. Individual therapy is indicated for patients who have serious problems in understanding speech, who suffer from severe apraxia of speech, severe buccofacial apraxia, or limb-kinetic apraxia, or for whom a group situation would be too demanding because of neuropsychological deficits (e.g., memory deficits or problems with "divided attention").

Group therapy is indicated for patients who are socially isolated because of impaired speech and threatened by emotional deprivation depending on the symptom and the desire and capacity to improve, according to the level of motivation assessed through the music. Therapy in a group facilitates verbal contact and supports cognitive performance (e.g., attention, working memory). Since the therapy elements involving exercise are varied in verbal complexity according to the degree of speech impairment, patients are assigned to groups depending on the severity of their symptoms and improving abilities.

The combination of individual and group therapy has turned out to be particularly effective.

Summary

The SIPARI[®] method has been successfully applied in a group context with patients suffering from Broca's aphasia and global aphasia with a mean duration of aphasia of 11 years (Jungblut, 2002, 2005; Jungblut & Aldridge, 2004) and in single case studies (Jungblut, Gerhard, & Aldridge, 2006; Jungblut, Suchanek, & Gerhard, 2009). This music-supported training brings about significant improvements in expressive speech in those parameters that focus on expressive linguistic performance, that is, the elements of articulation and prosody in *spontaneous speech*, *repetition*, and especially *naming* (Jungblut, 2002, 2005; Jungblut & Aldridge, 2004; Jungblut et al., 2006; Jungblut, Suchanek, & Gerhard, 2009), which implies that more comprehensive activation of speech-systematic processes must have been initiated. An improvement in auditory *comprehension* is probably

related to significant improvements in repetition, since repetition requires auditory processing.

The results of our just-completed fMRI study are a further step toward identifying the neural correlates underlying this treatment approach (Jungblut, Huber, Pustelniak, & Schnitker, 2009). The fact that significant improvements can be achieved even in the chronic stage by this directed music-supported training, which goes hand in hand with considerable improvements of patients' quality of life and that of their families and friends, will hopefully serve to ensure more attention for the late stages of long-term rehabilitation. It is our opinion that this constitutes not only an objective for social and human considerations but also a challenge for therapists and researchers alike.

Declaration of Conflicting Interests

The author has declared that there are no conflicts of interests in the authorship and publication of this contribution.

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