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Review article

Overview of research over the efficiency of therapies of stuttering

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ABSTRACT

Introduction: A number of methods of therapy of stuttering have been developed, which can be grouped as direct, indirect and compound methods. Direct methods are aimed at the very speech act and lead to improving speech fluency. Indirect methods are supposed to influence the person and his/her organism. Compound methods are a combination of direct and indirect methods in the form of a therapeutic program.

Aim: The aim of the overview was to analyze 17 articles that presented studies over the efficiency of direct, indirect and compound therapies of stuttering, as published in PubMed database between 2008 and 2015.

Discussion: As far as direct methods of stuttering are concerned, devices like SpeechEasy, DAF and FAF (i.e. the one which alter the patient's perception of his/her own speech), as well as a metronome turn out to be really efficient. Indirect methods which use biofeedback, tactile and visual transmission of feedback as well as hypnotherapy combined with diaphragm exercise are equally effective. Laser acupuncture and cognitive therapy seem to improve the positive results achieved by means of other methods. Among the compound methods, Lidcombe Program in its different variants proves to be highly efficient among children, whereas Camperdown Program works well among teenagers and adults. One may have certain hopes with regard to an innovative program referred to as Acceptance and Commitment Therapy.

Conclusions: Studies on efficiency of therapies of stuttering are scattered, do not cover the whole structure of the disorder and are focused on the symptom i.e. on assessing the severity of speech disfluency. Considering the research done so far, one cannot conclude that some methods are better than others since neither of them were compared in an experimental way.

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1. Introduction

1.1. *The nature of stuttering, the aims of its therapy and key indicators of its efficiency*

Views on the nature of this disorder influence both the aims of its therapy and key indicators of efficiency of the therapy. Stuttering is most often regarded as pathological speech disfluency, thus the primary aim of its therapy is to reduce the frequency of such symptoms of fluency disorder as sound, syllable and word repetitions as well as combinations of the three, utterance blocking, redundant pauses, sound ('yyy,' 'aaa') and word (Polish 'tego,' 'no') interjections, and revisions. If we include psychosocial factors into the definition, then stuttering can be understood as a function of speech disfluency as well as individual and social reactions to it. In that case, therapy is aimed not only at improvement of fluency, but also at change of negative reactions into positive ones e.g. by replacing logophobia with willingness to communicate. From the systemic perspective, stuttering has its own structure which consists of the following groups of factors: linguistic and paralinguistic (e.g. fluency and speech pace disorders), biological (e.g. excessive muscle tension, breathing, phonation and articulation disorders), psychological (e.g. logophobia, annoyance) and social (e.g. disturbed interpersonal communication). The therapy is aimed at improving performance against these factors and changing the relationships between them.[1,2]

1.2. *Methodological basis of research over the effectiveness of therapies of stuttering*

Efficiency of therapy is defined as the degree to which a given program or therapeutic method leads to positive results. However, measuring efficiency is troublesome as:

(1) Examination should cover all the key elements of the structure of stuttering, making interdisciplinary approach necessary, which in fact hardly ever happens.
(2) Reduced frequency of stuttering calculated on the basis of the percentage of disfluently pronounced syllables is perceived as the primary indicator of efficiency of a therapy. This may be debatable as speech sample of the same person may differ significantly and stuttering as a phenomenon is changeable as it occurs in some situations, while does not in others. Speech disfluency is most often measured in a laboratory or a doctor's surgery, and not during natural communication. At the same time, patients are aware that they are being examined, which may distort the results obtained. In a situation like this it is controlled fluency rather than spontaneous fluency that is observed as improving. Also, speech pace and naturalness are rarely measured simultaneously.
(3) Measurement of efficiency of therapy of stuttering requires the examiner to assess physiological, psychological and social factors as well, and correlate them with severity of speech disfluency. Improved speech fluency which is not accompanied by reduced muscle tension and logophobia does not lead to permanent positive results of a therapy.
(4) Spontaneous subsidence of stuttering, observed particularly among young children, hinders the measurements of efficiency of therapy.
(5) Effects of a therapy should be assessed several times, including assessment done at least one after the therapy ends as relapses of stuttering are frequent.
(6) Selection, representativeness and size of the groups examined should be of special interest. The examined groups are often small and control groups are absent, which hinders reliable statistical analysis. Following the complete model of experimental research is difficult also because of other objective reasons (e.g. lack of volunteers).
(7) Studies over efficiency of a therapy should offer convincing arguments that the method has been applied appropriately and its results are measured in a repeated way.[3] Also, it is advisable not only to make the results valuable from the academic perspective, but also to make them useful in a patient's everyday life in order to improve its quality. It is sometimes the case that the changes recorded are statistically significant, though clinically invaluable.[4]

2. Aim

The aim of this overview was to analyze 17 articles which presented studies over the effectiveness of direct, indirect and compound therapies of stuttering, as published in PubMed database between 2008 and 2015.

3. Discussion

The analysis of 17 articles does not cover studies over pharmacotherapy of people who stutter, which have been discussed in a separate publication,[5] as well as overviews developed earlier.[6,7] Although a number of methods of therapy of stuttering have been developed, they can be referred to as direct, indirect and compound.[8]

3.1. *Direct methods*

Direct methods are aimed at the very speech act and lead to improving speech fluency. They include the following techniques: the technique of slow, prolonged speech, rhythmization, the 'more fluent stuttering' method as well as influencing speech fluency by using devices.

A study which was based on choral speaking and made use of the SpeechEasy device has showed that all adult people who stuttered (18) that used the device for 13–59 months displayed a varied degree of improvement in speech fluency. When compared to the initial assessment, 7 subjects did not display any statistically significant improvements, while the other 11 – quite the opposite.[9]

Using a metronome (intervals of 0.75 s and 0.30 s) proved to be equally effective for 13 subjects aged 18–62, who were examined with a set of reading and monologue tests after their therapy. The disfluency reduced very significantly, and the reduction level was higher for the 0.75 s interval and

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