

# **Item 53 : Main techniques in re-education and rehabilitation. How to prescribe physiotherapy and speech therapy**

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## Objectifs ENC

- Explain the principles of use and prescription of the main techniques of re-education and rehabilitation.

### 1. How to prescribe speech therapy

#### 1.1. Introduction

Generally, a speech therapist is requested when the medical profession notes a difficulty with spoken language. The main objective of a speech therapy is to correct (if possible) or improve oral communication. By extension, as speech therapists intervene in cases of oral language difficulties, their help is often required in a broad range of communication difficulties, for example, in cases of neurological deficiencies or multiple neurosensory disabilities. Speech therapy is fundamental in cases of delayed speech in children. This is where the acquisition of oral language is rendered difficult by impaired hearing. The audio-phonatory loop is often stated as having two functions, auditory and phonatory, which are closely connected and in constant interaction. For example, it is very difficult to sing correctly if one cannot hear well. Due to their central interest in the production and understanding of language, speech therapists are often consulted to help patients suffering from a functional impairment of the larynx, which is the main sound producing organ. One example of where their help is essential is in cases of complete absence of the larynx, e.g., in cases of cancer surgery. Equally, since the larynx is primordial in deglutition, speech therapy is required in cases of difficulties in swallowing that are not related to sound production difficulties. Therefore, speech therapy has a vast range of applications. Consequently, it is not unheard of that speech therapists prefer to become highly specialized in a certain area, such as in either hearing loss, or pharyngolaryngeal deglutition disorders and dysphonia.

In practice, the physician has primarily a diagnostic role and puts forward the indication of a speech and language assessment. It is at the end of this assessment that the speech therapist decides on the type of adapted patient management and the number of sessions required. Although the term may be controversial, one often speaks of speech and language re-education.

#### 1.2. Indication of the speech and language assessment

This is the physician's fundamental role. Physicians should consider speech therapy every single time they encounter a language, phonatory or deglutition impairment in a patient under their care. Of course, the diagnostic approach to the cause of the impairment must always be considered either prior to, or simultaneously during speech assessment but never *retrospectively*.

For example, the physician should not even consider speech therapy in a dysphonic patient before checking the larynx, *a fortiori* if the subject is at risk of laryngeal cancer.

For childhood deafness, the approach is a little different inasmuch as the speech therapist helps the physician assess the linguistic handicap induced by the hearing loss. The physician, therefore, participates in the evaluation of the severity of the hearing impairment. Nevertheless, the physicians must do their utmost to characterize the type of hearing loss, its stage, as well as its etiology. In other words, the physician should not rely on the speech therapist to establish a diagnosis on his/her behalf, even if the latter's help often proves highly valuable.

#### 1.3. Speech therapy for hearing loss

The role of the speech therapist is indispensable in hearing impairments in children. In adults, who could hear perfectly in the past, the speech therapist is only interested in those who are profoundly handicapped by their hearing loss. In practice, this concerns the severely or profoundly deaf where external or implanted hearing aids are not sufficient enough to restore an adequate audio-phonatory loop. Speech therapy aims, in these cases, to implement all possible means and strategies to enable the better use of auditory perceptions in order to understand and produce oral language.

In children, the warning signs of a hearing impairment must be well known. Prelingual and postlingual hearing loss can be distinguished depending on the date of onset of deafness, *i.e.*, whether it occurred before or after the start of language acquisition. In principle, postlingual hearing loss does not cause any diagnostic problem, as parents rapidly worry about the language regression of their child. On the other hand, prelingual hearing loss is more difficult to diagnose, as there is no specific benchmark for a child who has never started talking. Therefore, it is imperative that the physician is aware of the major developmental stages of oral language. These stages are listed in the corresponding chapter, but it is useful to note the main points :

This schema may vary from one individual to another, but overall, if a delay is noted, it is essential to evoke a delayed language acquisition and, above all, impaired hearing.

Here, we must emphasize the particular importance of the physician in paying attention to the parents' perception regarding the hearing capability of their child. One should not be falsely reassured by parents who think that their child's hearing is not impaired when an obvious language delay is noticed. Contrarily, the utmost importance should be given to parents worried about their child's hearing, especially if they already have other children, or if there are risk factors for hearing loss (family history, complex pregnancies, notably with twins, difficult labor, neonatal infections, ICU hospitalization, etc. see hearing loss in children).

At this point, the diagnosis of prelingual hearing loss is so difficult to establish that many errors are made. The development of the auditory cortex, which is essential in language development, is dependent on being able to hear over a very specific period of time.

In practice, if a child does not hear before a certain age, 5 years being the fatal date for a hearing aid, it is not possible for that child to acquire correct oral language skills, regardless of the means of auditory rehabilitation implemented. That is why neonatal hearing assessments are so important as long as precaution is implemented when announcing a diagnosis and that constant and effective technical and psychological support is given.

It is therefore, above all, through a language delay or phonation disorder that the diagnosis of hearing loss is established. It is important to specify certain definitions :

Speech assessment primarily serves to specify the language delay, its type, and to consider appropriate speech and language therapy management. While the physician should raise the question of hearing loss when faced with language impairment, it is not uncommon for the diagnosis to be made by the speech therapist following an assessment requested for school difficulties, for example.

In prelingual children, the speech therapist's assessment also evaluates the appetite of the child to communicate and listen to ambient noise, if he has some remaining auditory function. Once a hearing aid is fitted, be it an external aid or cochlear implant, the speech therapist assesses the progress in the child's communication and language. The speech therapist's help is often well received to adjust the settings of the hearing aid.

Postlingual deafness occurs in children who became deaf after language development was initiated (the association of words in metaphrases was already acquired). In this case, the role of the speech and language assessment is also to specify the delay, *i.e.*, to assess the language level of the disabled child.

In any case, the role of speech and language therapy is to help the child catch up and better understand surrounding sounds by any other means. Lip reading is of fundamental interest. Help can be given using specific codes formed with fingers on lips when pronouncing words to facilitate and refine the deciphering process of lip-reading. This coded language, known as cued speech, is of paramount importance in the case of deafness corrected by a cochlear implant. Emphasis is currently on the effectiveness of a multimodal approach to speech therapy rehabilitation in deafness, which is both auditory and visual.

In deaf adults, speech and language therapy is used to help the patient understand his conversational partner and ambient sounds better. The external hearing aid has made such progress that speech therapy is only required in the case of profound deafness. However, even in the stages of less severe deafness, speech therapy may be justified, at least for learning how to lip read, in order to make understanding easier, but also to facilitate subsequent care in the event of foreseeable worsening of the condition.

## 1.4. Impairment in written language

Speech and language therapy can be requested for written language difficulties, which is often a cause why children fail at school. There is frequently a disorder associated with oral language, but this is not always the case.

Dyslexia is often associated with problems in learning to read, with confusion of graphemes and the inversion or omission of letters. Dysorthographia concerns disorders of the acquisition of spelling rules. Dysgraphia is noted following excessively bad calligraphy. It can also include disorders in logical reasoning, notably revealed by major difficulties in mathematics.

In practice, when faced with school difficulties of this type, it is good to firstly check keenness of hearing, and secondly to request a speech and language assessment.

## 1.5. In the case of children with multiple disabilities

Speech therapy is part of a multidisciplinary therapeutic strategy, developing all means of communication with the surrounding world, even in the case where children are fully incapable of oral and/or written language, and even in the absence of peripheral hearing loss.

## 1.6. Speech therapy in pharyngolaryngeal disorders, including dysphonia

In this case, there is impairment of the laryngeal function and therefore, often impaired deglutition. Either the larynx is damaged following surgery or its mobility is altered.

In laryngeal paralysis, the speech therapist assesses the phonatory state and implements a treatment plan to compensate for the unilateral lack of mobility by the other side. The accurate diagnosis of the laryngeal condition is essential and partially directs speech and language therapy (position and tonicity of the vocal chord). In the case of bilateral affliction, the role of the speech therapist is more relative. In intermittent functional impairment with spasmodic dysphonia, speech therapists help the subjects to master their phonation. In cases of laryngeal misuse with vocal forcing, the role of the speech therapist is essential to teach the patients how use their voice and to breathe better, so as not to induce the formation of vocal nodules (also known as kissing nodules). Speech therapy must regulate all function-related vocal microsurgery acts.

In cases of organically afflicted conditions of the larynx, often occurring following surgery, speech therapy is fundamental to achieve two essential goals :

- an audible phonation;
- correct deglutition avoiding false passages.

In these cases, speech and language therapy is not only aimed at improving larynx mobility, but also for good pharyngolaryngeal coordination during phonation and above all, deglutition. In the extreme case of total laryngectomy, speech therapy allows for the acquisition of the laryngeal voice by using the pharyngeal muscles.

In all cases, it is essential to provide the larynx-operated-on patient with speech therapy.

## 1.7. Speech therapy in dysphagia

In addition to larynx impairments, there may be deglutition disorders. The typical case is following oropharynx surgery. Certain teams reported a frequency of almost 40% for deglutition impairment in these

patients. Speech therapy in these cases mobilizes the neopharynx and makes the patient aware of the deglutition movements so as to avoid false passages.

## 1.8. Speech therapy and velo-palato-pharyngeal and buccal conditions

Speech therapy is a fundamental support for the correct acquisition of speech in cases of cleft palate or other velo-palato-pharyngeal malformations, or in cases of velopharyngeal functional disorders. Speech therapy helps to cope with velar insufficiency with rhinolalia (air leakage in the nasal cavity during phonation). If reconstructive surgery is contemplated, speech therapy is essential for functional recovery.

## 1.9. Speech therapy and neurological disorders

Especially after a stroke, central complex disorders affecting both phonation and deglutition may occur. These disorders not only affect laryngeal or pharyngeal motility, but also pharyngolaryngeal coordination. Speech production may also be impaired as well as language. In disorders that often lead to a least partial recovery, speech therapy is an indispensable tool used not only to promote recovery as much as possible, but also to help the patient adapt to each unstable state at each stage of recovery, if and when they arrive.

Speech therapy is, in practice, recommended in the following cases :

- Neurological disorders :
  - language disorders (aphasia, dementia, especially Alzheimer's disease, and aging with cognitive decline),
  - speech (dysarthria),
  - written language (central neurovisual impairment),
- Dysphonia,
- Deglutition disorders.

## 2. How to prescribe physiotherapy

### 2.1. Introduction

In France, the physiotherapist is a health-care professional trained for 3 years after passing an entry examination (1 400 places in approximately 30 schools).

The masseur physiotherapist carries out manual and instrumental acts that are intended to either prevent, or restore or compensate for functional disabilities. This therapist is consulted, following medical referral, to treat numerous ailments. Remaining within their professional limits, they are required to perform an assessment. This includes an evaluation of functional capacity and deficiencies. This enables a "physiotherapy" diagnosis to be made and a technical re-education program to be put forward. The physician's referral for therapy can be modified by the same at any time.

It is specified in the regulatory texts that the physiotherapist participates in the re-education of patients within the scope of otorhinolaryngologic diseases, such as :

- vestibular balance disorders;
- isolated deglutition disorders;
- maxillofacial conditions.

## 2.2. Maxillofacial physiotherapy and re-education

Maxillofacial physiotherapy and re-education are indicated in the dysfunction of the temporomandibular joint. There are two types of symptoms: pain and restriction in buccal opening. The etiology is multiple: sequelae of trauma, surgical sequelae, and functional affliction. Physiotherapy aims to improve buccal opening by reducing contractures.

## 2.3. Physiotherapy and facial paralysis

The handicap linked to peripheral facial paralysis can make patients very anxious. The prognosis depends on the etiology.

Whether the prognosis is good or bad, physiotherapy is often indicated. There is a double objective: re-education and psychological support.

Re-education includes :

- lymphatic draining facial massages;
- work on muscle groups (mimicking facial expressions).

General facial contractions and forced work are prescribed. This re-education program should take place at both the beginning of paralysis and the sequelae stage (contracture, synkinesia, and facial spasms).

## 2.4. Physiotherapy and vestibular re-education

Balance is a complex function. It uses three sensory afferents (vestibular, visual, and proprioceptive). Their symmetry depends on unconscious and normal functioning of balance. Damage to the vestibular apparatus causes a balance disorder, which entails, among other things, dizzy spells.

Vestibular re-education has two objectives depending on the origin of the disorder :

### 2.4.1. Benign paroxysmal positional vertigo

Treatment for benign paroxysmal positional vertigo (the most frequently encountered cause of vertigo) is not, strictly speaking, a re-education technique but a therapeutic technique. It uses a liberating maneuver to move otoliths that have often migrated to the posterior semicircular canal.

In certain positions, such as the lateral position or during flexion and extension of the head, the patient feels intense and brief episodes of dizziness.

The maneuver that can be carried out by a physiotherapist, following medical advice, is to induce the dizzy spell on the patient in a lying position and then quickly turning the patient to the other side in order to move the otoliths and make them 'leave' the posterior semicircular canal (Semont maneuver).

### 2.4.2. Other vertigo-inducing situations

The intended objectives are :

- decrease the intensity, duration, and frequency of the dizzy spells;
- improve standing/walking balance;
- decrease the associated symptoms (nausea).

Re-education is indicated in the following situations :

- unilateral vestibular impairment such as vestibular neuritis, section of the vestibular nerve (e.g., after acoustic neuroma);
- bilateral vestibular impairment;
- balance disorder in the elderly characterized by a lack of use of the vestibular information often associated with a decrease in other sensory information (vision, proprioception, motion sickness, or travel sickness).

The techniques used include :

- stimulation using a rotating chair that acts on the reflexivity of the two vestibules;
- optokinetic reflex stimulation (projection of moving dots of light with a standing patient). This technique decreases a possible visual dependence and favors the use of somatosensory information;
- proprioceptive platform. The patient stands on a mobile platform. The objective is to develop proprioception by favoring the use of somatosensory information.

These techniques are combined with psychological treatment and care so as to lessen the impact of the situation.

## 2.5. Physiotherapy and cervical carcinological surgery

A lymph node dissection combined with radiation therapy is likely to lead to trophic disorders and lesions in the area of the accessory nerve (11<sup>th</sup> cranial pair). This trauma leads to shoulder pain and difficulty in arm abduction. Upon examination, a shoulder shrug is impossible, and there is abnormal detachment of the scapula.

Treatment combines the use of a pain-relieving shoulder splint as well as compensation techniques that use other muscles. The result is often only partial recovery.