This search summary contains the results of a literature search undertaken by the Lincolnshire Knowledge and Resource Service librarians in;
March 2013

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If you would like this search re-run with a different focus, or updated to accommodate papers published since the search was completed, please let us know. This literature searching service is available to support public health / health and social care commissioning in Lincolnshire.

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“Google can bring you back 100,000 answers, a librarian can bring you back the right one.”
Neil Gaiman
“Google can bring you back 100,000 answers, a librarian can bring you back the right one.”

Neil Gaiman
Please find below the results of your literature search request. If you would like the full text of any of the abstracts included, or would like a further search completed on this topic, please let us know. A feedback form is included with these search results. We would be very grateful if you had the time to complete it for us, so that we can monitor satisfaction with the service we provide.

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Enquiry Details

Clinical effectiveness of voice therapy for the treatment of reflux related laryngeal dysfunction impacting on the phonation system.

Although the request is specifically for the above mentioned condition, any information regarding voice therapy for the treatment of any conditions would be very useful.

If you could also search the literature for any data on cost effectiveness of voice therapy that would be very helpful.

Search History:
*VOICE THERAPY/- "voice therapy".ti,ab - LARYNGOPHARYNGEAL REFLUX/
*GASTROESOPHAGEAL REFLUX/complications - LARYNGEAL DISEASES/
"laryngeal dysfunction".

Opening Internet Links
The links to internet sites in this document are ‘live’ and can be opened by holding down the CTRL key on your keyboard while clicking on the web address with your mouse.

Full Text Papers
Links are given to full text resources where available. For some of the papers, you will need a free NHS Athens Account. If you do not have an account you can register by following the steps at: https://register.athensams.net/nhs/nhseng/. You can then access the papers by simply entering your username and password. If you do not have easy access to the internet to gain access, please let us know and we can download the papers for you.

Guidance on Searching within Online Documents
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Click on the Search button (illustrated with binoculars). This will open up a search window. Type in the term you need to find and links to all of the references to that term within the document will be displayed in the window. You can jump to each reference by clicking it. You can search for more terms by pressing ‘search again’.

Word documents
Select Edit from the menu, the Find and type in your term in the search box which is presented. The search function will locate the first use of the term in the document. By pressing ‘next’ you will jump to further references.
Voice therapy for the treatment of reflux related laryngeal dysfunction

Literature Reviews

Otorhinolaryngeal and phonation aspects of gastroesophageal reflux disease
Citation: Orvosi hetilap, November 2001, vol./is. 142/47(2617-2620), 0030-6002 (25 Nov
Author(s): Horvath E., Taller A., Elo J. Language: Hungarian
Abstract: Experts dealing with patients of chronic upper and lower airway disorders have
drawn a lot of interest in the last decades to gastroesophageal reflux disease (GORD).
Nowadays it is obvious that 'occult GORD' may be an aetiological factor in this group of
patients. GORD may has a role in lot of organic laryngeal diseases and functional voice
disorders. Symptoms are triggered by gastric content refluxed into the oesophagus, which
cause irritation and inflammation. At laryngeal and phoniatric examinations gastrointestinal
signs might remain hidden behind chronic cough, hoarseness and globus sensation. Authors
summarise the diagnostic and therapeutical possibilities of GORD and its typical laryngeal and
phoniatric manifestations. Although the first step is medication of GORD, it might come to
surgical intervention of the laryngeal alterations, sometimes followed by voice therapy as
well. Authors draw attention to patients after laryngectomy, whose voice rehabilitation
therapy is extremely hindered by medical therapy resistant GORD. These patients may
benefit of anti-reflux surgery.

Randomised Controlled Trials

Effectiveness of voice therapy in reflux-related voice disorders.
Citation: Diseases of the Esophagus, January 2010, vol./is. 23/1(27-32), 1120-8694;1442-
Author(s): Vashani K, Murugesh M, Hattiangadi G, Gore G, Keer V, Ramesh VS, Sandur V,
Abstract: Gastroesophageal reflux (GER) with laryngopharyngeal reflux plays a significant
role in voice disorders. A significant proportion of patients attending ear, nose, and throat
clinics with voice disorders may have gastroesophageal reflux disease (GERD). There is no
controlled study of the effect of voice therapy on GERD. We assessed the effect of voice
therapy in patients with dysphonia and GERD. Thirty-two patients with dysphonia and GERD
underwent indirect laryngoscopy and voice analysis. Esophageal and laryngeal symptoms
were assessed using the reflux symptom index (RSI). At endoscopy, esophagitis was graded
according to Los Angeles classification. Patients were randomized to receive either voice
therapy and omeprazole (20 mg bid) (n=16, mean [SD] age 36.1 [9.6] y; 5 men; Gp A) or
omeprazole alone (n=16, age 31.8 [11.7] y; 9 men; Gp B). During voice analysis, jitter,
shimmer, harmonic-to-noise ratio (HNR) and normalized noise energy (NNE) were assessed
using the Dr. Speech software (version 4 1998; Tigers DRS, Inc). Hoarseness and
breathiness of voice were assessed using a perceptual rating scale of 0-3. Parameters were
reassessed after 6 weeks, and analyzed using parametric or nonparametric tests as
applicable. In Group A, 9 patients had Grade A, 3 had Grade B, and 1 had Grade C
esophagitis; 3 had normal study. In Group B, 8 patients had Grade A, 2 had Grade B
esophagitis, and 6 had normal study. Baseline findings: median RSI scores were
comparable (Group A 20.0 [range 14-27], Group B 19.0 [15-24]). Median rating was 2.0 for
hoarseness and breathiness for both groups. Values in Groups A and B for jitter 0.5 (0.6)
versus 0.5 (0.8), shimmer 3.1 (2.5) versus 2.8 (2.0), HNR 23.0 (5.6) versus 23.1 (4.2), and
NNE -7.3 (3.2) versus -7.2 (3.4) were similar. Post-therapy values for Groups A and B: RSI
scores were 9.0 (5-13; P<0.01 as compared with baseline) and 13.0 (10-17; P<0.01),
respectively. Ratings for hoarseness and breathiness were 0.5 (P<0.01) and 1.0 (P<0.01)
and 2.0. Values for jitter were 0.2 (0.0; P=0.02) versus 0.4 (0.7), shimmer 1.3 (0.7; P<0.01)
versus 2.3 (1.2), HNR 26.7 (2.3; P<0.01) versus 23.7 (3.2), and NNE -12.3 (3.0, P<0.01)
versus -9.2 (3.4; P<0.01). Improvement in the voice therapy group was significantly better
than in patients who received omeprazole alone. Dysphonia is a significant problem in GER.
Treatment for GER improves dysphonia, but in addition, voice therapy enhances the
improvement. REQUEST FROM LKRS
Voice therapy for the treatment of any conditions

Overview

The Medscape Reference* website provides an article summarising voice therapy:

Summary
Voice therapy is an essential component of treatment for many patients with voice disorders. In many cases, voice therapy is the primary treatment recommended for many patients. This article is far from a comprehensive review of all voice therapy techniques, but rather a cursory outline of some of the more salient issues involved in the therapeutic process. Voice therapy is individualized; the type of therapy can vary greatly from patient to patient and from clinician to clinician with similar levels of success. In conclusion, when performed by a certified speech language pathologist (SLP) with specific training and experience in voice disorders, voice therapy can be effective in helping many patients with voice disorders.

The full article can be viewed at: http://emedicine.medscape.com/article/866712-overview#a1

*Medscape Reference is the most authoritative and accessible point-of-care medical reference for physicians and health care professionals. All content is available free of charge, both online and via mobile devices.

Commissioning Manual

The Royal College of Speech and Language Therapists’ Commissioning Manual for Speech, Language and Communications Needs contains sections summarising the evidence base for a range of treatment areas. The Voice section is attached.

8. What is the evidence for SLT interventions for Voice Disorder? (pp.27-34)

Summary
Most studies investigating treatment or prevention of voice disorders are undertaken in populations at high risk of developing voice conditions. With only a few exceptions, studies were undertaken in populations of teachers. The majority of patients who take part in and complete the studies appear to be motivated for treatment whereas those who are not tend to drop out. In terms of preventing disorders, higher level evidence (a systematic review) did not support the provision of direct or indirect voice therapy whereas lower level evidence found therapy did improve voice quality. Voice therapy results in better outcomes for patients when compared with no treatment. In terms of types of therapy, voice amplifications seems a cheap, reliable and accepted form of therapy for teachers, with an advantage being that patients are highly compliant when given this treatment. Other treatments such as resonance therapy and expiratory muscle strengthening can result in positive outcomes for patients and treatment can be successfully delivered remotely. Voice therapy programmes that combine aspects of direct and indirect therapy appear to be the most successful and are accepted well by patients. The medical intervention of Botulinum toxin for spasmodic dysphonia results in great improvements for the majority of patients.

REQUEST FROM LKRS
Guidelines

Clinical practice guideline: hoarseness (dysphonia).
American Academy of Otolaryngology-Head and Neck Surgery Foundation
http://guideline.gov/content.aspx?f=rss&id=15203

Statement 8A. Laryngoscopy Prior to Voice Therapy
Clinicians should visualize the larynx before prescribing voice therapy and document/communicate the results to the speech-language pathologist.

Recommendation based on observational studies showing benefit and a preponderance of benefit over harm.

Statement 8B. Advocating for Voice Therapy
Clinicians should advocate voice therapy for patients diagnosed with hoarseness (dysphonia) that reduces voice-related QOL.

Strong recommendation based on systematic reviews and randomized trials with a preponderance of benefit over harm.

Evidence Profile for Statement 8A: Visualizing the Larynx
Aggregate evidence quality: Grade C, observational studies of the benefit of laryngoscopy for voice therapy
Benefit: Avoid delay in diagnosing laryngeal conditions not treatable with voice therapy, optimize voice therapy by allowing targeted therapy
Harm: Delay in initiation of voice therapy
Cost: Cost of the laryngoscopy and associated clinician visit
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: To ensure no delay in identifying pathology not treatable with voice therapy. Speech-language pathologists (SLPs) cannot initiate therapy prior to visualization of the larynx by a clinician
Policy level: Recommendation

Evidence Profile for Statement 8B: Advocating for Voice Therapy
Aggregate evidence quality: Grade A, randomized controlled trials and systematic reviews
Benefit: Improve voice-related QOL; prevent relapse; potentially prevent need for more invasive therapy
Harm: No harm reported in controlled trials
Cost: Direct cost of treatment
Benefits-harm assessment: Preponderance of benefit over harm
Value judgments: Voice therapy is underutilized in managing hoarseness despite efficacy; advocacy is needed
Role of patient preferences: Adherence to therapy is essential to outcomes
Intentional vagueness: Deciding which patients will benefit from voice therapy is often determined by the voice therapist. The guideline panel elected to use a symptom based criterion to determine to which patients the treating clinician should advocate voice therapy
Policy level: Strong recommendation
Clinical practice guideline: hoarseness (dysphonia).

Citation: Otolaryngology - Head & Neck Surgery, September 2009, vol./is. 141/3 Suppl 2(S1-S31), 0194-5998:1097-6817 (2009 Sep)

Author(s): Schwartz SR, Cohen SM, Dailey SH, Rosenfeld RM, Deutsch ES, Gillespie MB,

Abstract: OBJECTIVE: This guideline provides evidence-based recommendations on managing hoarseness (dysphonia), defined as a disorder characterized by altered vocal quality, pitch, loudness, or vocal effort that impairs communication or reduces voice-related quality of life (QOL). Hoarseness affects nearly one-third of the population at some point in their lives. This guideline applies to all age groups evaluated in a setting where hoarseness would be identified or managed. It is intended for all clinicians who are likely to diagnose and manage patients with hoarseness.

PURPOSE: The primary purpose of this guideline is to improve diagnostic accuracy for hoarseness (dysphonia), reduce inappropriate antibiotic use, reduce inappropriate steroid use, reduce inappropriate use of anti-reflux medications, reduce inappropriate use of radiographic imaging, and promote appropriate use of laryngoscopy, voice therapy, and surgery. In creating this guideline the American Academy of Otolaryngology-Head and Neck Surgery Foundation selected a panel representing the fields of neurology, speech-language pathology, professional voice teaching, family medicine, pulmonology, geriatric medicine, nursing, internal medicine, otolaryngology-head and neck surgery, pediatrics, and consumers.

RESULTS: The panel made strong recommendations that 1) the clinician should not routinely prescribe antibiotics to treat hoarseness and 2) the clinician should advocate voice therapy for patients diagnosed with hoarseness that reduces voice-related QOL. The panel made recommendations that 1) the clinician should diagnose hoarseness (dysphonia) in a patient with altered voice quality, pitch, loudness, or vocal effort that impairs communication or reduces voice-related QOL; 2) the clinician should assess the patient with hoarseness by history and/or physical examination for factors that modify management, such as one or more of the following: recent surgical procedures involving the neck or affecting the recurrent laryngeal nerve, recent endotracheal intubation, radiation treatment to the neck, a history of tobacco abuse, and occupation as a singer or vocal performer; 3) the clinician should visualize the patient’s larynx, or refer the patient to a clinician who can visualize the larynx, when hoarseness fails to resolve by a maximum of three months after onset, or irrespective of duration if a serious underlying cause is suspected; 4) the clinician should not obtain computed tomography or magnetic resonance imaging of the patient with a primary complaint of hoarseness prior to visualizing the larynx; 5) the clinician should not prescribe anti-reflux medications for patients with hoarseness without signs or symptoms of gastroesophageal reflux disease; 6) the clinician should not routinely prescribe oral corticosteroids to treat hoarseness; 7) the clinician should visualize the larynx before prescribing voice therapy and document/communicate the results to the speech-language pathologist; and 8) the clinician should prescribe, or refer the patient to a clinician who can prescribe, botulinum toxin injections for the treatment of hoarseness caused by adductor spasmodic dysphonia. The panel offered as options that 1) the clinician may perform laryngoscopy at any time in a patient with hoarseness, or may refer the patient to a clinician who can visualize the larynx; 2) the clinician may prescribe anti-reflux medication for patients with hoarseness and signs of chronic laryngitis; and 3) the clinician may educate/counsel patients with hoarseness about control/preventive measures.

DISCLAIMER: This clinical practice guideline is not intended as a sole source of guidance in managing hoarseness (dysphonia). Rather, it is designed to assist clinicians by providing an evidence-based framework for decision-making strategies. The guideline is not intended to replace clinical judgment or establish a protocol for all individuals with this condition, and may not provide the only appropriate approach to diagnosing and managing this problem.
Assessing efficacy of voice treatments: a guideline.

Citation: Revue de Laryngologie Otologie Rhinologie, 2000, vol./is. 121/5(307-10), 0035-

Author(s): Committee on Phoniatrics of the European Laryngological Society

Abstract: The proposal of this guideline or basic protocol is an attempt to reach better agreement and uniformity concerning the methodology for functional assessment of pathological voices. The purpose is to allow relevant comparisons with the literature when presenting/publishing the results of voice treatment, e.g. a phonosurgical technique, or a new/improved instrument or procedure for investigating the pathological voice. Meta-analyses of results of voice treatments are generally limited--and even impossible--due to the major diversity in assessing functional outcomes. A minimal, multidimensional set of basic measurements is proposed, suitable for all "common" dysphonias: it includes 5 different approaches: perception (grade, roughness, breathiness), videoendoscopy (closure, regularity, mucosal wave and symmetry), acoustics (jitter, shimmer, Fo-range and softest intensity), aerodynamics (phonation quotient), and self rating by the patient. The protocol is elaborated on the base of an exhaustive review of the literature, the experience of the Committee members, and of plenary discussions within the European Laryngological Society. Instrumentation is kept to a minimum, but considered essential for professionals performing phonosurgery.
Systematic Reviews

Effects of voice therapy: A systematic review that results in limited conclusions
Evidence-Based Communication Assessment and Intervention, 2010, vol./is. 4/1(1-4), 1748-
Author(s): Watts C.R., Prezas R.F., Awan S.N.
Description: This is a systematic review of studies (including at least 5 subjects) investigating
the effect of non-pharmacological, non-surgical voice therapy provided by speech-language
pathologists for individuals with voice disorders.
Population: Patients with functional dysphonia, organic dysphonia, or mixed functional and
organic dysphonia.
Intervention/Assessment: Voice therapy.
Number of Studies Included: 47
Years Included: Through February 2006
Conclusions:
When trying to answer the question whether voice therapy in general is effective, one may
conclude that no single answer can be given to that question, because of the diversity in
phoniatric diagnoses, subject's personalities, voice therapies, as well as voice assessment
instruments.

Effectiveness of voice rehabilitation on vocalisation in postlaryngectomy patients: a
systematic review.
Citation: International Journal of Evidence-Based Healthcare, 2010, vol./is. 8/4(256-8),
Author(s): Xi S
Abstract: BACKGROUND: Laryngeal cancer is one of the most common malignant
neoplasia of the head and neck. Its incidence has been increasing steadily all over the world.
Many patients will undergo total laryngectomy with or without radical neck dissection after
being diagnosed. After this surgery, normal speech is lost, and a permanent stoma in the
middle of the neck is left. Therefore, voice rehabilitation is one of the most difficult
challenges that these patients must overcome. In order to support the patients,
otorhinolaryngologists, nursing specialists and speech pathologists have explored several
different methods for voice rehabilitation. Variations exist on the approaches of rehabilitation
and indicators selected to measure the effectiveness. There is a need to undertake a
systematic review to provide a plan of care and ascertain the effectiveness regarding
different voice rehabilitation programs for postlaryngectomy patients. REVIEW OBJECTIVE:
To critically analyse the literature and present the best available evidence related to the
effectiveness of voice rehabilitation program on postlaryngectomy patients.SEARCH
STRATEGY: A three-step search strategy was utilised. An initial limited search of MEDLINE
and CINAHL databases was undertaken followed by an analysis of the text words contained
in the title and abstract to identify the optimal index terms. A second extensive search using
all identified key words and index terms was then undertaken. Third, the reference list and
bibliographies of all identified reports and articles were searched for additional studies. The
measurement index included voice intelligibility, volume, clarity, quality of voice, patients'
satisfaction, quality of life, etc. The search included reports in English and
Chinese.SELECTION CRITERIA: The review considered any randomised controlled trials
that addressed voice rehabilitation methods in postlaryngectomy patients. In the absence of
randomised controlled trials, other quantitative research designs, such as non-randomised
controlled trials, cohort studies and case-controlled studies, were considered for
inclusion.DATA COLLECTION AND ANALYSIS: Full copies of articles considered to meet
the inclusion criteria were obtained for critical appraisal by two reviewers using the CASP
(Critical Appraisal Skills Program) and McMaster scales. We utilised the 60% fulfilling of the
evaluation scale items as the cut-off point and articles with a quality score less than 60%
were excluded. Details of eligible trials were extracted and summarised by two reviewers
independently using standardised data extraction tools developed by the Joanna Briggs
Institute.RESULTS: Twenty-two articles were included in the review (Appendix I). Different
voice rehabilitation methods for laryngectomees were investigated in the included studies
including oesophageal voice, electrolarynx voice and surgical voice restoration. One cohort studies, five prospective studies, five retrospective studies and 11 descriptive studies were included. Because of the heterogeneity of included studies, meta-analysis was not possible. Therefore, the results were presented in narrative summary. The following main findings were identified: 1. At present, oesophageal speech, electrolarynx and tracheoesophageal were the commonly used voice rehabilitation methods with total laryngectomy patients. 2. Among these three methods, the success rate of electrolarynx and tracheoesophageal is much higher than oesophageal speech. 3. The intelligibility and speech quality of electrolarynx was lower than tracheoesophageal. 4. Patient satisfaction and self-assessed quality of life was better in tracheoesophageal group. 5. The objective index was similar between excellent tracheoesophageal and oesophageal speech patients.

Conclusion 1. Electrolarynx is the easiest vocal rehabilitation method for total laryngectomy patients to use as it requires little training and does not limit the patients. But patients’ satisfaction was lower because of the mechanical voice and noise. 2. Oesophageal speech is the hardest vocal rehabilitation method to learn. It needs a long period of time to practise and requires the patient to be in good physical condition and to be relatively young. The success rate was relatively lower; however, it is the most commonly used rehabilitation method in developing countries because of low cost. 3. Tracheoesophageal is the most commonly used voice rehabilitation method in developed countries. It is a surgical method that could be performed as either a primary procedure or secondary procedure. Reported patient quality of life and satisfaction following tracheoesophageal were the best; however, there are complications and the frequent replacement of the prostheses is an important problem yet to be solved.

Implication for practice 1. Voice rehabilitation after total laryngectomy is an immediate and long-term problem that patients and health worker must face. 2. Healthcare workers should understand the advantages and disadvantages of each voice rehabilitation method in detail to assist people with total laryngectomy to make the most appropriate decision in regard to rehabilitation method taking into consideration their age, sex, physical condition, job, economic status and other context factors. Implication for research 1. Further high-quality studies comparing the effectiveness of oesophageal speech, electrolarynx and tracheoesophageal vocal rehabilitation methods are needed, especially with the subjective and objective outcome index concurrently. 2. Further investigation is required to identify strategies to decrease the complications of tracheoesophageal and reduce frequency of required tracheoesophageal replacement. 3. More research is needed in the context of developing countries where healthcare resources may be limited.


Effects of voice therapy: a systematic review.
Citation: Journal of Voice, September 2008, vol./is. 22/5(565-80), 0892-1997;1557-8658
Author(s): Speyer R
Abstract: Medical as well as paramedical treatments should be evaluated by scientific methods. This systematic review focuses on the effects of voice therapy, excluding pharmacological or surgical treatments. In general, statistically significant positive but modest and varying therapy effects are found. Many of these effect studies cope with diverse methodological problems. Furthermore, the conclusions of most studies cannot be generalized easily or compared to one another. As a consequence, many issues in the field of effects of voice therapy have yet been unanswered.
Systematic review of the treatment of functional dysphonia and prevention of voice disorders

Citation: Otolaryngology - Head and Neck Surgery, May 2008, vol./is. 138/5(557-565), Author(s): Ruotsalainen J., Sellman J., Lehto L., Verbeek J.

Abstract: Objective: To evaluate the effectiveness of interventions for treating functional dysphonia or preventing voice disorders in adults. Data Sources: We searched MEDLINE (1950 to 2006), EMBASE (1974 to 2006), CENTRAL (Issue 2 2006), CINAHL (1983 to 2006), PsychINFO (1967 to 2006), Science Citation Index (1986 to 2006), and the Occupational Health databases OSH-ROM (February 2006). Review Methods: Systematic review and meta-analysis of randomized controlled trials. Included studies evaluated the effectiveness of interventions for 1) treating functional/nonorganic dysphonia or 2) preventing voice disorders. We identified six randomized controlled trials about treatment and two about prevention. Two authors independently extracted data and assessed trial quality. Results: A combination of direct and indirect voice therapy, compared with no intervention, improves self-reported (standardized mean difference -1.07; 95% CI -1.94 to -0.19), observer-rated (weighted mean difference [WMD] -13.00; 95% CI -17.92 to -8.08), and instrumentally assessed vocal functioning (WMD -1.20; 95% CI -2.37 to -0.03) in adults with functional dysphonia. Effects are reported to remain for at least 14 weeks. Effects are similar in patients and in teachers and student teachers screened for voice problems. We found two studies that did not show voice training, compared with no intervention, to have a preventive effective in improving self-reported vocal functioning. Assessment of publication bias showed that the real effect sizes are probably smaller. Conclusion: Comprehensive voice therapy is effective in improving vocal performance in adults with functional dysphonia. There is no evidence of effectiveness of voice training in preventing voice disorders. 2008 American

Interventions for treating functional dysphonia in adults

Citation: Cochrane database of systematic reviews (Online), 2007, vol./is. /3(CD006373), Author(s): Ruotsalainen J.H., Sellman J., Lehto L., Jauhiainen M., Verbeek J.H.

Abstract: BACKGROUND: Poor voice quality due to functional dysphonia can lead to a reduced quality of life. In occupations where voice use is substantial it can lead to a loss of employment. OBJECTIVES: To evaluate the effectiveness of interventions to treat functional dysphonia in adults. SEARCH STRATEGY: We searched MEDLINE (PubMed, 1950 to 2006), EMBASE (1974 to 2006), CENTRAL (The Cochrane Library, Issue 2 2006), CINAHL (1983 to 2006), PsychINFO (1967 to 2006), Science Citation Index (1986 to 2006) and the Occupational Health databases OSH-ROM (to 2006). The date of the last search was 5(th) April 2006. SELECTION CRITERIA: Randomised controlled trials (RCTs) of interventions evaluating the effectiveness of treatments targeted at adults with functional dysphonia. For work-directed interventions interrupted time series and prospective cohort studies were also eligible. DATA COLLECTION AND ANALYSIS: Two authors independently extracted data and assessed trial quality. Meta-analysis was performed where appropriate. MAIN RESULTS: We identified six randomised controlled trials including a total of 163 participants in intervention groups and 141 controls. One trial was high quality. Interventions were grouped into 1) Direct voice therapy 2) Indirect voice therapy 3) Combination of direct and indirect voice therapy and 4) Other treatments: pharmacological treatment and vocal hygiene instructions given by phoniatrist.No studies were found evaluating direct voice therapy on its own. One study did not show indirect voice therapy on its own to be effective when compared to no intervention. There is evidence from three studies for the effectiveness of a combination of direct and indirect voice therapy on self-reported vocal functioning (SMD -1.07; 95% CI -1.94 to -0.19), on observer-rated vocal functioning (WMD -13.00; 95% CI -17.92 to -8.08) and on instrumental assessment of vocal functioning (WMD -1.20; 95% CI -2.37 to -0.03) when compared to no intervention. The results of one study also show that the remedial effect remains significant for at least 14 weeks on self-reported vocal functioning (SMD -0.51; 95% CI -0.87 to -0.14) and on observer-rated vocal functioning (Buffalo Voice Profile) (WMD -0.80; 95% CI -1.14 to -0.46). There is also limited evidence from one study that the number of symptoms may remain lower for a year. The combined therapy with
biofeedback was not shown to be more effective than combined therapy alone in one study nor was pharmacological treatment found to be more effective than vocal hygiene instructions given by phoniatrist in one study. Publication bias may have influenced the results. AUTHORS' CONCLUSIONS: Evidence is available for the effectiveness of comprehensive voice therapy comprising both direct and indirect therapy elements. Effects are similar in patients and in teachers and student teachers screened for voice problems. Larger and methodologically better studies are needed with outcome measures that match treatment aims.

Interventions for preventing voice disorders in adults.
Citation: Cochrane Database of Systematic Reviews, 01 December 2007, vol./is. /4(0-),
Author(s): Ruotsalainen JH, Sellman J, Lehto L, Isotalo LK, Verbeek JH
Abstract: Background; This is an update of a Cochrane Review first published in The Cochrane Library in Issue 4, 2007., Poor voice quality due to a voice disorder can lead to a reduced quality of life. In occupations where voice use is substantial it can lead to periods of absence from work., Objectives; To evaluate the effectiveness of interventions to prevent voice disorders in adults., Search strategy; We searched databases including CENTRAL, MEDLINE, EMBASE, CINAHL, PsycINFO and OSH Update to March 2010., Selection criteria; Randomised controlled clinical trials (RCTs) evaluating interventions for preventing voice disorders in adults. For work-directed interventions, interrupted time-series and prospective cohort studies were also eligible., Data collection and analysis; Two authors independently extracted data and assessed trial risk of bias. We performed meta-analysis where appropriate., Main results; We identified six randomised controlled trials including a total of 262 participants. Four studies were conducted with primary school or kindergarten teachers, one with student teachers and one with telemarketers., Three studies found similar self-reported vocal symptoms between those who attended direct voice training and those who were in a no intervention control group (standardised mean difference (SMD) 0.27; 95% CI -0.12 to 0.66)., Two studies found similar self-reported vocal symptoms between those who attended indirect voice training and those who were in a no intervention control group (SMD 0.44; 95% CI -0.03 to 0.92)., One study found similar scores on the Voice Handicap Index for those who had direct and indirect voice training combined and for those who had no intervention. Two studies compared a combination of direct and indirect voice training with indirect voice training only. Both studies found similar scores for self-reported phonation difficulty (mean difference -5.55; 95% CI -23.75 to 12.66) in both groups., The evidence for all comparisons was rated as low quality., No work-directed studies were found. No studies evaluated the effectiveness of prevention in terms of sick leave or number of diagnosed voice disorders., Authors' conclusions; We found no evidence that either direct or indirect voice training or the two combined are effective in improving self-reported vocal functioning when compared to no intervention. The current practice of giving training to at-risk populations for preventing the development of voice disorders is therefore not supported by definitive evidence of effectiveness. Larger and methodologically better trials are needed with outcome measures that better reflect the aims of interventions., [CINAHL Note: The Cochrane Collaboration systematic reviews contain interactive software that allows various calculations in the MetaView.]
A comparison of speech and language therapy techniques for dysarthria in Parkinson's disease

Citation: Cochrane database of systematic reviews (Online), 2001, vol./is. /2(CD002814), Author(s): Deane K.H., Whurr R., Playford E.D., Ben-Shlomo Y., Clarke C.E.

Abstract: BACKGROUND: Dysarthria is a common manifestation of Parkinson's disease that increases in frequency and intensity with the progress of the disease (Streifler 1984). Up to 20% of Parkinsonian patients are referred for speech and language therapy (S & LT), its aim being to improve the intelligibility of the patient's speech. OBJECTIVES: To compare the efficacy and effectiveness of novel S & LT techniques versus standard S & LT to treat dysarthria in patients with Parkinson's disease. To compare the efficacy and effectiveness of one S & LT technique versus a second form of S & LT to treat Parkinsonian dysarthria.

SEARCH STRATEGY: Relevant trials were identified by electronic searches of MEDLINE, EMBASE, CINAHL, ISI-SCI, AMED, MANTIS, REHABDATA, REHADAT, GEROLIT, Pascal, LILACS, MedCarib, JICST-EPlus, AIM, IMEMR, SIGLE, ISI-ISTP, DISSABS, Conference Papers Index, Aslib Index to Theses, the Cochrane Controlled Trials Register, the CentreWatch Clinical Trials listing service, the metaRegister of Controlled Trials, ClinicalTrials.gov, CRISP, PEDro, NIDRR and NRR; and examination of the reference lists of identified studies and other reviews. SELECTION CRITERIA: Only randomised controlled trials (RCT) were included. DATA COLLECTION AND ANALYSIS: Data was abstracted independently by KD and RW and differences settled by discussion. MAIN RESULTS: Only two trials were identified with only 71 patients. The method of randomisation was good in only one trial and the concealment of allocation was inadequate in both trials. These methodological problems could potentially lead to bias from a number of sources. The methods used in the two studies varied so much that meta-analysis of the results was not possible. Scott 83 compared prosodic exercises with visual cues with prosodic exercises alone (See Glossary: Table 01). The authors examined prosody and intelligibility as outcome measures immediately after therapy. Ramig 95 compared the Lee Silverman Voice Therapy (LSVT) which emphasises increased vocal effort, with respiratory therapy which aimed to increase respiratory muscle activity. Ramig 95 examined a wide range of vocal characteristics, activities of daily living affected by speech, depression and the carer's impressions of the patient's speech quality. Some of these outcomes were measured up to 24 months after the end of the therapy. However, in neither study were changes in outcomes due to 'Therapy A' compared with the changes due to 'Therapy B' statistically. Therefore no comment on the comparative efficacy of these types of speech and language therapy can be made. REVIEWER'S CONCLUSIONS: Considering the methodological flaws in both of these studies, the small number of patients examined, and the possibility of publication bias, there is insufficient evidence to support or refute the efficacy of any given form of S & LT over another to treat dysarthria in Parkinson's disease. Given the lack of evidence from RCTs to support or refute the efficacy of S & LT in Parkinson's disease (see Cochrane review 'Speech and Language therapy for Dysarthria in Patients with Parkinson's Disease'), the consensus as to what is considered 'best-practice' S & LT must be proved first through a large well-designed placebo-controlled randomised trial before examining variations in S & LT methodology. The design of these trials should minimise bias and be reported fully using CONSORT guidelines (CONSORT 1996). Outcome measures with particular relevance to patients, their carers, physicians and speech and language therapists should be chosen and the patients followed for at least 6 months to determine the duration of any improvement.
Otolaryngology Clinic of North America: Evidence-Based Practice. Management of Hoarseness/Dysphonia

Citation: Otolaryngologic Clinics of North America, October 2012, vol./is. 45/5(1109-1126),
Author(s): Chang J.I., Bevans S.E., Schwartz S.R.

Abstract: This article reviews the evidence for the evaluation and management for patients with dysphonia. The evidence behind laryngoscopy, laryngostroboscopy, laryngeal imaging, laryngeal electromyography, and disease-specific questionnaires are reviewed. The evidence for management of some of the common conditions leading to dysphonia is also reviewed. This article reviews the evidence for voice therapy for various voice pathologies; medical management of dysphonia, including antibiotics, steroids, and antireflux therapy; and surgical management of glottic insufficiency and some benign laryngeal masses. 2012

Evidence-Based Practice. Evaluation and Management of Unilateral Vocal Fold Paralysis

Citation: Otolaryngologic Clinics of North America, October 2012, vol./is. 45/5(1083-1108),
Author(s): Misono S., Merati A.L.

Abstract: This article discusses the causes and symptoms, evaluation, and management of unilateral vocal fold paralysis (UVFP). Cross-sectional imaging is appropriate in the work-up of idiopathic UVFP, but the routine use of serology is not well supported. The usefulness of laryngeal electromyography has remained controversial. Predictors of poor prognosis for functionally meaningful recovery include fibrillation potentials, positive sharp waves, and absent/reduced voluntary motor unit potentials. Voice therapy may be helpful. Injection and laryngeal framework surgery (medialization thyroplasty) improve vocal quality. The vocal impact of laryngeal reinnervation is comparable with that of medialization. Some patients may benefit from multiple procedures. 2012 Elsevier Inc.

Laryngopharyngeal reflux and larynx-related symptoms

Citation: HNO, March 2012, vol./is. 60/3(200-205), 0017-6192 (March 2012)
Author(s): Ptok M., Ptok A.

Abstract: Background: Chronic hoarseness, globus sensation or mucous obstruction are among a wide range of symptoms possibly related to laryngopharyngeal reflux (LPR). Method and results: A selective literature research was carried out using PubMed, in which original articles and reviews in German and English were included. Altogether, 2541 articles were found. Despite the large number of publications, there are still open questions regarding aspects of LPR. Discussion: It can be assumed that refluxate reaching the larynx can damage it. Due to the fact that the symptoms possibly related to LPR can, however, be linked to other causes, a careful consideration of the patient's medical history is of the utmost importance, followed by mandatory laryngoscopy. Diagnostic procedures, such as the trial administration of proton pump inhibitors (PPI) or long-term pH measurement should be used selectively. Depending on the individual symptoms, breathing or voice therapy and/or PPI therapy might be useful. Lifestyle changes including dietary measures should also be contemplated. 2012 Springer-Verlag.
Effectiveness of voice therapy in functional dysphonia: where are we now?.

**Citation:** Current Opinion in Otolaryngology & Head & Neck Surgery, June 2011, vol./is. 19/3(160-4), 1068-9508;1531-6998 (2011 Jun)

**Author(s):** Bos-Clark M, Carding P

**Abstract:** PURPOSE OF REVIEW: To review the recent literature since the 2009 Cochrane review regarding the effectiveness of voice therapy for patients with functional dysphonia.RECENT FINDINGS: A range of articles report on the effects of voice therapy treatment for functional dysphonia, with a wide range of interventions described. Only one study is a randomized controlled trial. A number of excellent review articles have extended the knowledge base. In primary research, methodological issues persist: studies are small, and not adequately controlled. Studies show improved standards of outcome measurement and of description of the content of voice therapy.SUMMARY: There is a continued need for larger, methodologically sound clinical effectiveness studies. Future studies need to be replicable and generalizable in order to inform and elucidate clinical practice.

**Publication Type:** Journal Article, Review

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Pathophysiology and treatment of muscle tension dysphonia: a review of the current knowledge.

**Citation:** Journal of Voice, March 2011, vol./is. 25/2(202-7), 0892-1997;1557-8658 (2011 Mar)

**Author(s):** Van Houtte E, Van Lierde K, Claey S

**Abstract:** OBJECTIVE: Muscle tension dysphonia (MTD) is a clinical and diagnostic term describing a spectrum of disturbed vocal fold behavior caused by increased tension of the (para)laryngeal musculature. Recent knowledge introduced MTD as a bridge between functional and organic disorders. This review addresses the causal and contributing factors of MTD and evaluates the different treatment options.METHODS: We searched MEDLINE (Pubmed, 1950-2009) and CENTRAL (The Cochrane Library, Issue 2, 2009). Studies were included if they reviewed the classification of functional dysphonia or the pathophysiology of MTD. Etiology and pathophysiology of MTD and circumlaryngeal manual therapy (CMT) were obligatory based on reviews and prospective cohort studies because randomized controlled trials (RCTs) are nonexistent. Concerning the treatment options of voice therapy and vocal hygiene, selection was based on RCTs and systematic reviews.RESULTS: Etiological factors can be categorized into three new subgroups: (1) psychological and/or personality factors, (2) vocal misuse and abuse, and (3) compensation for underlying disease. The effective treatment options for MTD are (1) indirect therapy: vocal hygiene and patient education; (2) direct therapy: voice therapy and CMT; (3) medical treatment; and (4) surgery for secondary organic lesions.CONCLUSIONS: MTD is the pathological condition in which an excessive tension of the (para)laryngeal musculature, caused by a diverse number of etiological factors, leads to a disturbed voice. Etiological factors range from psychological/personality disorders and vocal misuse/abuse to compensatory vocal habits in case of laryngopharyngeal reflux, upper airway infections, and organic lesions. MTD needs to be approached in a multidisciplinary setting where close cooperation between a laryngologist and a speech language pathologist is possible. Copyright 2011 The Voice
Intensive voice treatment in Parkinson’s disease: Lee Silverman Voice Treatment.

**Citation:** Expert Review of Neurotherapeutics, June 2011, vol./is. 11/6(815-30), 1473

**Author(s):** Sapir S, Ramig LO, Fox CM

**Abstract:** Advances in neuroscience have led to an expanded and improved understanding of neurobiological changes associated with rehabilitation and exercise in Parkinson’s disease (PD). This knowledge has led to a direct clinical impact of increased referral for early and continuous exercise programs for individuals with PD (physical, occupational, speech therapy and general exercise programs) and an increased research focus on the impact of such approaches in humans with PD. The purpose of this article is to examine the role of speech therapy in the landscape of exercise-based interventions for individuals with PD. We will specifically focus on the intensive voice treatment protocol, Lee Silverman Voice Treatment, as an example therapy. This article will briefly review the literature on the characteristics and features of speech and voice disorders in individuals with PD, and will discuss the impact of pharmacological and surgical treatment techniques on these disorders. This will be followed by a focus on behavioral speech treatment, specifically Lee Silverman Voice Treatment, including development of the treatment approach, documenting efficacy, discovery of unexpected outcomes and insights into the mechanism of speech disorders in PD gained from treatment-related changes. This research will be placed in the context of other previous and current speech treatment approaches in development for individuals with PD, and will highlight future directions for research.

The lee silverman method for rehabilitation of speech in parkinson's disease

[English;Portuguese] O metodo lee silverman para reabilitacao da fala na doenca de parkinson

**Citation:** Revista Neurociencias, 2011, vol./is. 19/3(551-557), 0104-3579 (2011)

**Author(s):** Dias A.E., Chien H.F., Barbosa E.R.

**Abstract:** Speech impairment (dysphonia and dysarthria) is a frequent manifestation in the evolution of Parkinson's disease (PD). Objective. This study reviews the Lee Silverman Method, considered the most efficient for the rehabilitation of PD speech impairment, and updates its most recent applications. Method. We search the following data base: MEDLINE, Pubmed e Bireme using the words: Parkinson's disease, PD, Lee Silverman Voice Treatment, LSVT, LSVT LOUD, LSVT parkinson, voice treatment and PD, voice therapy and PD, communication and PD, dysarthria and PD, dysphonia and PD, speech disorders and PD, voice disorders and PD, hypophonia and PD, speech motor system and PD. Results. In the literature, there are many descriptions of good results of the Lee Silverman method in PD. The articles depict improvement in the following topic: prosody, articulation, resonance, respiration, intelligibility, intensity, and quality of voice, as well swallowing and facial expressiveness. Conclusion. There are many efficient speech therapy techniques for voice rehabilitation. But, according to the literature, the Lee Silverman Method is advantageous since it was develop specifically for PD. There are innumerable evidences for its efficacy, moreover it has been constantly evaluated and its application is broaden continually.
**Voice therapy and vocal nodules in adults**

Current Opinion in Otolaryngology and Head and Neck Surgery, 2009, 17/6(453-457), 1068-

**Author(s):** Leonard R.

**Abstract:** Purpose of review: This review considers recent and significant information pertinent to voice therapy for vocal nodules. Recent findings: Available evidence suggests that voice therapy directed to excessive, hyperfunctional and maladaptive vocal practices can be effective in improving voice quality and reducing size/extent of pathology. However, there is also a growing literature suggesting that behavioral approaches may not be sufficient to permanently heal tissue changes in some patients, regardless of compliance with treatment aims, due to lasting structural damage in the vocal fold cover. This evidence underscores the need for early identification and education in individuals at risk for nodules. Summary: The relationship between vocal nodules and excessive, phonotraumatic voice use is well established. Voice therapy typically consists of education regarding vocal fold mechanics and etiological factors, as well as modification of specific vocal practices that either cause, exacerbate or result from inappropriate voice production. Therapy can be effective in improving voice quality and tissue health but does not necessarily result in complete resolution of pathology. It should always be considered as a part of the treatment regimen for patients with vocal nodules.

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**Hoarseness in adults.**

Citation: American Family Physician, August 2009, vol./is. 80/4(363-70), 0002-838X;1532-

**Author(s):** Feierabend RH, Shahram MN

**Abstract:** Numerous conditions can cause hoarseness, ranging from simple inflammatory processes to more serious systemic, neurologic, or cancerous conditions involving the larynx. Evaluation of a patient with hoarseness includes a careful history, physical examination, and in many cases, laryngoscopy. Any patient with hoarseness lasting longer than two weeks in the absence of an apparent benign cause requires a thorough evaluation of the larynx by direct or indirect laryngoscopy. The management of hoarseness includes identification and treatment of any underlying conditions, vocal hygiene, voice therapy, and specific treatment of vocal cord lesions. Vocal hygiene education is an integral aspect of the treatment of hoarseness in most cases. Referral to a speech-language pathologist for voice therapy may be particularly helpful for patients whose occupation depends on singing or talking loudly or for prolonged periods. Voice therapy is an effective method for improving voice quality and vocal performance in patients with nonorganic dysphonia and for treating many benign pathologic vocal cord lesions. Referral for surgical or other targeted interventions is indicated when conservative management of vocal cord pathology is unsuccessful, when dysplasia or carcinoma is suspected, or when significant airway obstruction is present.

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**Voice therapy for vocal fold paralysis**

Citation: Otolaryngologic Clinics of North America, February 2004, vol./is. 37/1(105-119),

**Author(s):** Miller S.

**Abstract:** There is no doubt that vocal fold paralysis is a debilitating condition affecting an individual's general health and quality of life [12]. Optimal management of a patient with vocal fold dysfunction by an otolaryngologist, speech scientist, and speech language pathologist results in detailed objective videostroboscopic evaluation of glottal configuration during phonation, acoustic and aerodynamic measures, laryngeal EMG (if appropriate), and the patient's self-rating of vocal disability. Profound glottal incompetence is typically managed surgically with a few voice therapy sessions after surgery to ensure optimal vocal function. Patients with more adequate glottal closure are often seen for voice therapy and lost to follow-up when their voices improve enough to satisfy their vocal needs [28]. It is essential that a complete battery of assessments, including perceptual, aerodynamic, acoustic, and stroboscopic measures, be obtained at periodic intervals in surgical and nonsurgical patients so as to evaluate vocal function over time [60]. One of the few rigorous studies of perceptual, acoustic, aerodynamic, and videofiberscopic findings in patients after
medialization with fat and thyroplasty assessed patients before surgery and at short (1-3 months), middle (4-6 months), and long (7-12 months) intervals after surgery [60]. Improvement in most parameters at short- and long-term intervals was noted but not in the middle interval. The best results were obtained in women. Continued difficulty in increasing and maintaining subglottal pressure for high-intensity phonation was observed in both male and female patients. This fine study raises a number of questions as follows. What objective phonatory measures should be assessed before and after intervention and at what time intervals? Why were the women's results better than the men's results when no correlation of age, pulmonary function, or severity of preoperative voice and aerodynamic impairment was observed? Should voice therapy be initiated at the 4- to 6-month interval when voice quality diminished or within 1 to 2 months after surgery so that the decrement in vocal function might not occur? Why did vocal function ultimately improve after 7 to 12 months? Heuer et al [28] and Colton and Casper [13] found similar outcome satisfaction in patients electing surgery compared with those that were seen for voice therapy; however, the patients with lesser glottal incompetence in both studies opted for therapy. Can we better define vocal parameters that help to predict which patients may need surgery rather than therapy? Should all patients with high airflow measures but near-normal subglottal pressures and MPT greater than 10 seconds undergo 6 weeks of voice therapy rather than medical intervention? If all surgical patients were seen for 6 weeks of postoperative therapy, would voice satisfaction ratings increase to greater than 70%? Can we perceptively or objectively differentiate patients whose postoperative voices will be excellent from those whose voices will be merely adequate? These questions can only be answered by the development and implementation of a rigorous protocol studying women and men of varying ages with unilateral vocal fold paralysis choosing medialization surgery and electing voice therapy. Standardized assessments must include perceptual, aerodynamic, acoustic, stroboscopic, and patient satisfaction measures during soft- and loud-intensity tasks before and at periodic intervals after the two interventions.

**Nontraditional tools helpful in the treatment of certain types of voice disturbances**

**Citation:** Current Opinion in Otolaryngology and Head and Neck Surgery, June 2003, vol./is. 11/3(149-153), 1068-9508 (June 2003)

**Author(s):** Emerich K.A.

**Abstract:** Voice therapy has evolved considerably over the past decade. Our field has learned to draw from other disciplines to help facilitate the restoration of vocal function by implementing a more holistic approach and utilizing principles of motor learning to create our therapy programs. Clinicians have learned to recognize that the voice is more than just the larynx. Rather, it is a whole body system, and breakdowns in systems throughout the body can be responsible for vocal disturbances. This review will cover the nontraditional approaches that aid in treating certain voice disorders that often are not discussed in textbooks or classrooms. Facilitating techniques include principles from singing and acting voice production, Feldenkrais, Alexander technique, Qigong, and circumlaryngeal massage.
Voice therapy methods in dysphonia

Citation: Otolaryngologic Clinics of North America, 2000, vol./is. 33/5(983-1002), 0030-6665
Author(s): Casper J.K., Murry T.
Abstract: The most common voice therapy approaches are described in this article, but many other techniques have been only mentioned or have been totally neglected because of the constraints of space. The focus has been on techniques that can be described succinctly and that are frequently referred to in the literature. Voice therapy is a directed way of changing a particular behavior or set of behaviors. As such, it demands the cooperation of the patient in ways that may be novel and unusual. Voice therapy differs from the medical approach that requires only that a pill be taken. It differs from the surgical approach wherein the surgeon does the work. It differs from the work that voice and acting coaches do to enhance and strengthen a normal voice in someone for whom working with the voice is natural. Voice clinicians work with individuals who never thought about the voice until they acquired a difficulty. They are primarily interested in rapid restoration of normal voice, a task that cannot always be accomplished. Recognizing these differences is important to understand subject variables as they relate to standardizing procedures and to evaluating the success or failure of voice therapy. (Another variable that is of equal importance and is equally difficult to control for research purposes is the skill of the clinician.) The interested reader can find further information in the many available texts and articles and can observe master voice therapy clinicians.

Voice therapy for neurologic disease

Citation: Current Opinion in Otolaryngology and Head and Neck Surgery, 1995, vol./is. 3/3(174-182), 1068-9508 (1995)
Author(s): Ramig L.O.
Abstract: The efficacy of voice treatment for neurologic disorders has only recently been addressed experimentally. This paper reviews a systematic approach to the treatment of voice problems accompanying neurologic disorders. Treatment efficacy data from the Lee Silverman Voice Treatment for patients with idiopathic Parkinson disease are discussed. The role of voice treatment in enhancing motor speech production is addressed.

The efficacy of voice therapy

Citation: Current Opinion in Otolaryngology and Head and Neck Surgery, 1997, vol./is. 5/3(153-160), 1068-9508 (1997)
Author(s): Ramig L.O., Verdolini K.
Abstract: There is both scientific and clinical evidence that individuals with voice disorders benefit from the services of speech-language pathologists. This evidence is documented in experimental research, clinical reports, retrospective analyses, and case studies. This paper reviews the literature on the effectiveness of behavioral treatment for voice disorders primarily using studies published in peer-reviewed journals. Data are reviewed that support voice treatment applied to various disorders including those related to vocal misuse and hyperfunction, special medical or physical conditions, and psychogenic factors. Directions for future research are suggested to maximize clinical and scientific outcomes and to enhance knowledge on the efficacy of voice treatment.
Randomised Controlled Trials


Citation: European Archives of Oto-Rhino-Laryngology, July 2004, vol./is. 261/6(312-5),

Author(s): Pedersen M, Beranova A, Møller S

Abstract: For many years all patients with dysphonia referred to in the literature as resulting from non-organic (functional) voice disorders were sent to speech therapy. Medical diagnoses were not taken into account. In our earlier Cochrane review on vocal cord nodules we discovered that evidence-based research in the area of benign voice disorders with dysphonia, and with or without slight benign swellings including nodules on the vocal cords, was lacking at that time. Therefore, a prospective randomised pilot study based on our Cochrane review has been made on dysphonic patients with non-organic (functional) voice disorders as the basis for further evidence-based studies. Medical treatment was based on the scientific approach that once a micro-organic disorder caused by reflux, infection, allergy or environmental irritants (e.g., dust or noise in the workplace) was discovered by very careful anamnesis and systematic objective routine analyses and was treated effectively, with documentation, the non-organic voice disorder disappeared, as, e.g., in the case of a diagnosis and treatment of helicobacter pylori. The reason is that the mucosal swelling/dysfunction of the vocal cords is secondary. In order to try to understand why the recommendation to all these patients for many years was only voice therapy, which the speech therapists "felt to be effective", updated voice-hygiene advice (for posture, accents of the diaphragm, intonation pattern and resonance) was given by experienced laryngologists, randomised with the updated medical diagnosis/therapy in order to elucidate what effect the training might have. No evidence-based studies in the literature document any effect. The crucial point seemed to be that doctors mostly did not examine any other diagnoses other than the "dysphonia" and did not dig down to any of the medical reasons when the vocal fold diagnosis of "non-organic disorders" was made. This should be changed in the future. This pilot study was based on a comparison of ten dysphonic patients with stroboscopic non-organic (functional) voice disorders, where a micro-organic diagnosis was searched for and treated systematically in a medical regime (for infections, allergies, gastroesophageal reflux and environmental irritants such as dust, noise, etc.) versus ten dysphonic patients with stroboscopically confirmed non-organic (functional) voice disorders, having only the traditional but optimal voice advice, which we can call medical voice-hygiene advice, including the use of the Accent method. A retrospective group of ten patients treated medically was included, too. A demand cannot be made that the functional group being treated by randomisation with voice advice should also be medically treated at once, the medical approach being the new one. On the other hand, it is strange that no evidence-based research was made before. All patients were measured two times with stored videostroboscopy, a quality-of-life questionnaire and phonetograms with 1-month intervals. All patient groups improved. There was no statistical improvement in favour of the medical group with the voice-related quality-of-life score, also not for the group who received voice-hygiene advice. The geometrical mean values of the phonetogram areas in decibels times semitones were better in all groups, but a statistical difference was not found between the medically treated group and the voice-hygiene advice group. The pilot study showed that both medical treatment and medical voice-hygiene advice had a positive effect on dysphonia in non-organic (functional) voice disorders. There is need of an extensive prospective randomised trial on dysphonia including vocal cord nodules to find out which treatment should be used for this group of patients. It is suggested that an eventual randomisation for microsurgical treatment or regular voice therapy should be made after a period of systematic medical diagnosis and treatment including medical voice-hygiene advice.

Publication Type: Clinical Trial, Comparative Study, Journal Article, Randomized Controlled Trial
Evaluating the effectiveness and efficiency of voice therapy using transnasal flexibility laryngoscopy: a randomized controlled trial.

Citation: Journal of Voice, 01 December 2004, vol./is. 18/4(522-533), 08921997

Author(s): Rattenbury HJ, Carding PN, Finn P

Abstract: Transnasal flexible laryngoscopy (TFL) is an examination of laryngeal anatomy and physiology using continuous light. TFL is being used increasingly by voice pathologists in treatment but with little scientific evidence to support it. The purpose of this study was to evaluate the effectiveness and efficiency of TFL as a therapeutic tool. The study used a prospective randomized controlled trial. Fifty dysphonic subjects were recruited and randomly assigned to either a traditional treatment group or a TFL-assisted treatment group. The effectiveness of voice therapy in both treatment groups was measured with a package of voice outcome measures. Subjects in both treatment groups demonstrated statistically significant improvements after voice therapy (perceptual auditory rating of voice quality measurement $p < 0.01$; instrumental electroglottographic measurement $p < 0.01$; patient questionnaire measurement $p < 0.01$). The time taken to complete treatment in both groups was recorded. The average (median) time taken to complete voice therapy in the TFL-assisted treatment group was 2 hours less than in the traditional treatment group ($p < 0.01$). Voice therapy with TFL as a therapy tool was effective and more efficient than traditional voice therapy.

A study of the effectiveness of voice therapy in the treatment of 45 patients with nonorganic dysphonia.

Citation: Journal of Voice, March 1999, vol./is. 13/1(72-104), 0892-1997;0892-1997 (1999

Author(s): Carding PN, Horsley IA, Docherty GJ

Abstract: Forty-five patients diagnosed as having nonorganic dysphonia were assigned in rotation to 1 of 3 groups. Patients in group 1 received no treatment and acted as a control group. Patients in groups 2 and 3 received a program of indirect therapy and direct with indirect therapy, respectively. A range of qualitative and quantitative measures were carried out on all patients before and after treatment to evaluate change in voice quality over time. Results revealed a significant difference between the 3 treatment groups in the amount of change for the voice severity, electrolaryngograph, and shimmer measurements and on ratings provided by a patient questionnaire ($P<0.05$). However, other measures failed to show significant differences between the 3 groups. Most of the patients (86%) in group 1 showed no significant change on any of the measures. Some patients in treatment group 2 (46%) showed significant change in voice quality. Fourteen out of 15 patients (93%) in treatment group showed significant changes in voice quality.

Publication Type: Clinical Trial, Comparative Study, Journal Article, Randomized Controlled Trial, Research Support, Non-U.S. Gov't, Review
Resolution of vocal fold polyps with conservative treatment
Citation: Journal of Voice, May 2012, vol./is. 26/3(e107-e110), 0892-1997;1873-4588 (May
Author(s): Nakagawa H., Miyamoto M., Kusuyama T., Mori Y., Fukuda H.
Abstract: Objectives: Vocal fold polyp is generally thought to require surgical removal. However, a certain proportion of polyps resolve with conservative treatment. This study was performed to clarify the frequency of spontaneous resolution of vocal fold polyp and identify features associated with polyps that are likely to resolve without surgery. Study Design: Retrospective study. Methods: A review of the medical records of patients diagnosed with vocal fold polyps in Tokyo Voice Center from January 2001 to December 2008. Results: Of 644 patients with the diagnosis of vocal fold polyp, 132 received conservative treatment, 433 were treated surgically, and 79 dropped out without attending for further consultation after the initial visit. Of those treated conservatively, 55 experienced complete resolution after a mean of 5.1 months of follow-up from the outset, and 29 showed lesion shrinkage after a mean of 4.1 months of follow-up. Polyps that resolved with conservative therapy were more likely than those that remained unchanged or enlarged to occur in women, be smaller, and have a shorter duration of symptoms. We could not determine the superiority of voice therapy. Conclusions: At least 9.7% of vocal fold polyps might resolve without surgery. Conservative treatment should be considered as an option for selected patients with smaller and more recent-onset polyps. 2012 The Voice Foundation.

The Effectiveness of Group Voice Therapy: A Group Climate Perspective.
Citation: Journal of Voice, 01 March 2012, vol./is. 26/2(0-), 08921997
Author(s): Law, Thomas, Lee, Kathy Y.-S., Ho, Fiona N.-Y., Vlantis, Alexander C., van
Abstract: Summary: Objectives/Hypothesis: Group therapy has frequently been adopted as a service delivery model for providing voice therapy. However, currently no literature has focused on understanding the underlying processes that are unique to group therapy, which contribute to treatment success. This study aimed at investigating the role of group climate in voice group therapy. Study Design: Prospective case series. Methods: Twelve teachers with hyperfunctional dysphonia attended eight sessions of group voice therapy. Treatment comprised both direct and indirect voice therapy. Therapy techniques were introduced and practiced in a large group and small group format. Outcome measures were taken using perceptual evaluation, videostroboscopy measures, voice-related quality-of-life (V-RQOL) measures, and vocal symptom scores. The Group Climate Questionnaire was used to measure the underlying process of group therapy. Treatment outcome was measured immediately posttreatment and at 6-months posttreatment. Results: Results indicated statistically significant improvement in the participants’ V-RQOL measures and the vocal symptom scores. Treatment gain was noted to sustain up to 6-months posttreatment. The Group Climate Questionnaire indicated that the treatment group is considered as “engaging” rather than “conflicting,” which is considered to be associated with positive treatment outcome. Conclusion: Group therapy as a service delivery model possesses many advantages from the psychosocial, clinical, health resources allocation perspective. This study demonstrated that group climate plays a significant role in determining treatment success in group voice therapy.
Behavioral voice therapy for adductor spasmodic dysphonia (ADSD)
Citation: Teikyo Medical Journal, November 2012, vol./is. 35/6(279-293), 0387-5547
Author(s): Ishige M.
Language: Japanese
Abstract: Background: Adductor spasmodic dysphonia (ADSD) manifests as voice breaks and a strained, tight voice quality. This study examined the efficacy of behavioral voice therapy alone for ADSD. Methods: Severity of vocal symptoms of 17 ADSD patients (16 women, one man) who received at least 2 sessions of voice therapy was perceptually evaluated before and after voice therapy by 9 experienced raters (6 otolaryngologists, 3 speech-language-hearing therapists) using a 7-point severity scale (0=normal, 6=most severe). A 2-point change in severity rating post-treatment was considered efficacious. Patients completed a follow-up questionnaire on subjective rating of symptoms, subjective outcome of voice therapy, and receipt or not of additional treatments after voice therapy. Results: According to the experienced raters, median severity was 4 (range 0-6) pre-treatment and 3 (0-6) post-treatment, indicating no significant improvement following therapy. In 4 (23.5%) patients, however, symptoms were noticeably improved, with a median post-treatment severity of 0.5 (range 0-1) and median degree of improvement (pre-treatment severity value minus post-treatment severity value) of 4 points (range 2-4). All 4 patients had no recurrence or regression and had sustained improvement at the end of the follow-up period (mean 64.5 months; range 15-108 months); 3 required no further medical interventions, and in the remaining patient vocal symptoms disappeared completely after type II thyroplasty following voice therapy, with no further voice therapy needed. Conclusions: The overall efficacy of voice therapy for ADSD did not reach statistical significance, but symptom severity was reduced in 23.5% of patients. Voice therapy alone, not combined with botulinum toxin treatment or surgical intervention, was efficacious for ADSD in some patients and could be an alternative, not just augmentative, treatment option for ADSD.

A comparison of the effects of the Lee Silverman voice treatment and traditional therapy on intelligibility, perceptual speech features, and everyday communication in nonprogressive dysarthria.
Citation: Journal of Medical Speech-Language Pathology, 2011, vol./is. 19/4(1-24),
Author(s): Wenke, Rachel J., Theodoros, Deborah, Cornwell, Petrea
Abstract: The current study aimed to compare the effects of the Lee Silverman Voice Treatment (LSVT®) with traditional dysarthria therapy (TRAD) on speech intelligibility, perceptual speech features, and everyday communication in non progressive dysarthria. Twenty-six participants with non progressive dysarthria were randomly allocated to receive either LSVT (n = 13) or TRAD (n = 13), with both treatments being provided during 16 hourly sessions over 4 weeks. An ABAA experimental design was used with participants being assessed on perceptual and self-report measures prior to treatment, immediately post treatment, and 6 months posttreatment (follow-up). A limited number of significant differences between the two treatments were identified. Differences included a slower speaking rate (words per minute) and reports of an increase in conversation initiation with strangers at follow-up in the LSVT group and reduced slurring of speech at follow-up in the TRAD group. Although certain improvements to intelligibility, rate, and loudness were found exclusively after LSVT, a comparable pattern of long-term improvements in participation and well-being as determined by the AusTOMs (the Australian version of the Therapy Outcome Measures), was demonstrated in participants after both treatments. The study demonstrated that the LSVT as a treatment option for individuals with nonprogressive dysarthria resulted in comparable effects to intensive TRAD. Because of the relatively small participant numbers and subjective nature of variables, it was suggested that the LSVT be trialed on an individual basis in this population until further research is undertaken. The positive effects of LSVT on dysarthric speakers and the importance of applying motor learning principles in dysarthria management are highlighted.
Differential Effects of Voice Therapies on Neurovegetative Symptoms and Complaints.

Citation: Journal of Voice, 01 September 2010, vol./is. 24/5(585-591), 08921997

Author(s): Demmink-Geertman L, Dejonckere P

Abstract: Summary: In previous studies, female patients in all age categories with a nonorganic dysphonia were found to report significantly more autonomic symptoms and complaints than healthy controls. After voice therapy, there was a highly significant reduction in the amount of autonomic symptoms and complaints (related or not related to voice). The present prospective study with a matched control group is designed to test the hypothesis that a specific kind of therapy is more efficient than the usual approaches in reducing these neurovegetative symptoms and complaints. Two matched groups of 34 patients diagnosed with nonorganic dysphonia and referred for voice therapy answered a questionnaire of 46 questions with 3 subsets and a consistency control. They received either “coordination therapy” (CTh)—a holistic approach addressing functional, personal and emotional aspects—or a conventional voice therapy (approximately 15 sessions). All patients again filled in a similar questionnaire after approximately 6 months. After therapy, there is in general a highly significant reduction in the amount of autonomic symptoms and complaints (related or not related to voice), to such an extent that patients report on average no more general neurovegetative symptoms and complaints than those of healthy controls. Symptoms and complaints of other nature (validity control) are not influenced. When compared with patients receiving conventional therapy, those who received CTh demonstrate a significantly higher reduction for the subset “neurovegetative symptoms/complaints related to voice and speech.”

Patient Factors Related to Voice Therapy Attendance and Outcomes.

Citation: Journal of Voice, 01 November 2010, vol./is. 24/6(694-701), 08921997

Author(s): Smith BE, Kempster GB, Sims HS

Abstract: Summary: Limited information is available concerning factors that may be associated with attendance and outcomes among patients referred for voice therapy. The purpose of this study was to determine whether patient-related factors could be identified which distinguished patients who attended voice therapy and had positive voice change from those who did not. This retrospective study included medical record information for 100 patients seen at a major urban, academic medical center. The attendance/outcomes of voice therapy resulted in patient division into five groups, those who (1) were successfully discharged from therapy, (2) attended a few sessions, had voices that improved to normal or were near normal and then stopped attending therapy, (3) attended many sessions with some voice gain, (4) failed to improve despite attending voice therapy, or (5) failed to attend voice therapy as recommended. Outcomes for groups 1–3 (53% of patients) were considered successful (positive voice change), whereas outcomes for groups 4 and 5 (47% of patients) were considered unsuccessful. A high percentage of patients (44%) essentially did not attend therapy. Patients having successful outcomes were more likely to be female, younger, employed, with fewer laryngeal diagnoses and medical problems, a less severe voice disorder and lower Voice Handicap Index (VHI) scores at the start of therapy. Patients with more complex laryngeal diagnoses, more perceived vocal severity, occupational issues, more health issues, and higher VHI scores at the time of the initial voice evaluation may be at greater risk for failing to attend voice therapy sessions.
Factors associated with voice therapy outcomes in the treatment of presbyphonia.

**Citation:** Laryngoscope, June 2010, vol./is. 120/6(1181-7), 0023-852X;1531-4995 (2010)

**Author(s):** Mau T, Jacobson BH, Garrett CG

**Abstract:** OBJECTIVES/HYPOTHESIS: Age, vocal fold atrophy, glottic closure pattern, and the burden of medical problems are associated with voice therapy outcomes for presbyphonia. STUDY DESIGN: Retrospective. METHODS: Records of patients seen over a 3-year period at a voice center were screened. Inclusion criteria consisted of age over 55 years, primary complaint of hoarseness, presence of vocal fold atrophy on examination, and absence of laryngeal or neurological pathology. Videostroboscopic examinations on initial presentation were reviewed. Voice therapy outcomes were assessed with the American Speech-Language-Hearing Association National Outcomes Measurement System scale. Statistical analysis was performed with Spearman rank correlation and chi(2) tests.

**RESULTS:** Sixty-seven patients were included in the study. Of the patients, 85% demonstrated improvement with voice therapy. The most common type of glottic closure consisted of a slit gap. Gender or age had no effect on voice therapy outcomes. Larger glottic gaps on initial stroboscopy examination and more pronounced vocal fold atrophy were weakly correlated with less improvement from voice therapy. A weak correlation was also found between the number of chronic medical conditions and poorer outcomes from voice therapy. CONCLUSIONS: The degree of clinician-determined improvement in vocal function from voice therapy is independent of patient age but is influenced by the degree of vocal fold atrophy, glottic closure pattern, and the patient's burden of medical problems.

Patient perceptions of voice therapy adherence.

**Citation:** Journal of Voice, 01 July 2010, vol./is. 24/4(458-469), 08921997

**Author(s):** van Leer E, Connor NP

**Abstract:** Patient perspectives of behavioral voice therapy, including perspectives of treatment adherence, have not been formally documented. Because treatment adherence is, to a large extent, determined by patient beliefs, assessment of patient perspectives is integral to the study of adherence. Fifteen patients who had undergone at least two sessions of direct voice therapy for a variety of voice disorders/complaints were interviewed about their perspectives on voice therapy, with a particular focus on adherence. Interviews were transcribed and analyzed for content according to qualitative methods. Three common content themes emerged from the transcripts: Voice Therapy is Hard, Make it Happen, and The Match Matters. Findings were compared with reports of patient experiences in other behavioral interventions, such as diet and exercise, and related to existing theoretical models of behavior change and therapeutic process. This study yields information toward the development of scales to measure adherence-related constructs and strategies to improve treatment adherence in voice therapy.

Changes to articulation following LSVT and traditional dysarthria therapy in non-progressive dysarthria.

**Citation:** International Journal of Speech-Language Pathology, 2010, vol./is. 12/3(203-220),

**Author(s):** Wenke RJ, Cornwell P, Theodoros DG

**Abstract:** The present study aimed to evaluate the effects of the Lee Silverman Voice Treatment (LSVT(R)) on acoustic and perceptual measures of articulation in non-progressive dysarthria in comparison to traditional dysarthria therapy. The study involved 26 individuals with non-progressive dysarthria who were randomly allocated to receive either LSVT(R) or traditional dysarthria therapy (TRAD), both of which were administered for 16 hourly sessions over 4 weeks. Participants' speech samples were collected over a total of six testing sessions during three assessment phases: (1) prior to treatment, (2) immediately post-treatment, and (3) 6 months post-treatment (FU). Speech samples were analysed perceptually to determine articulatory precision and intelligibility as well as acoustically using vowel space (and vowel formant measures) and first moment differences. Results revealed short and long-term significant increases in vowel space area following LSVT(R). Significantly increased intelligibility was also found at FU in the LSVT(R) group. No
significant differences between groups for any variables were found. The study reveals that LSVT(R) may be a suitable treatment option for improving vowel articulation and subsequent intelligibility in some individuals with non-progressive dysarthria.

Effectiveness of Lee Silverman Voice Treatment (LSVT)® on hypernasality in non-progressive dysarthria: the need for further research.

International Journal of Language & Communication Disorders, 2010, vol./is. 45/1(31-46),

Author(s): Wenke RJ, Theodoros D, Cornwell P

Abstract: Background: Hypernasality is a common feature of non-progressive dysarthria. However, limited research has investigated the effectiveness of treatments for this impairment. Preliminary research has revealed positive effects on nasalance when using increased loudness in certain non-progressive dysarthric speakers. However, the long-term effects of loud speech on nasalance as part of a structured intervention such as Lee Silverman Voice Treatment (LSVT)® are yet to be investigated in this population. Aims: The study aimed to investigate the short- and long-term effects of LSVT® on hypernasality (perceptual ratings and degree of nasalance) in non-progressive dysarthria; and secondly, to evaluate the effects of traditional dysarthria therapy on these same measures, in comparison with the effects of LSVT®. Methods & Procedures: Ten non-progressive dysarthric speakers with varying levels of hypernasality (taken from a larger research study) were randomly allocated to receive LSVT® (n = 5) or individually tailored traditional dysarthria therapy (n = 5). Both treatments were administered four times weekly for 4 weeks (that is, 16 £ 1-hour sessions). Participants were assessed twice before treatment, twice immediately post-treatment, and twice at followup 6 months post-treatment using a perceptual rating task performed by two independent speech pathologists, and the Nasometer. Changes to individual mean nasalance scores were compared against clinically significant criterion and perceptual ratings were analysed descriptively. Outcomes & Results: Three out of five participants demonstrated reductions in perceived hypernasality immediately following LSVT®, but these changes were maintained at follow-up for only one participant. Two of these three participants demonstrated a corresponding reduction in mean nasalance. Limited changes in perceived hypernasality and nasalance scores were found following traditional dysarthria therapy, with only one participant exhibiting reduced nasalance at follow-up. Conclusions & Implications: Due to the small sample size in the present research and variability between participants, further exploration into the effects of LSVT® on nasality with a larger population with different dysarthria types is essential.

Vocal function exercises for presbylaryngis: a multidimensional assessment of treatment outcomes.

Citation: Annals of Otology, Rhinology & Laryngology, 01 July 2010, vol./is. 119/7(460-467),

Author(s): Sauder C, Roy N, Tanner K, Houtz DR, Smith ME

Abstract: Objectives: Presbylaryngis, or aging of the larynx, can adversely affect vocal function and quality of life in the elderly. This preliminary investigation examined the effects of vocal function exercises, a physiologic voice therapy approach, as a primary treatment for presbylaryngis. Methods: Nine consecutive elderly patients with presbylaryngis (2 female, 7 male) underwent a 6-week course of voice therapy employing vocal function exercises. Pretherapy-versus-posttherapy comparisons were made of self-ratings of voice handicap and phonatory effort level, as well as auditory-perceptual voice assessments, acoustic analyses, and visual-perceptual evaluations of laryngeal images. Results: After treatment, patients reported significant reductions on Voice Handicap Index scores, phonatory effort levels, and voice disorder severity. Blinded listeners rated the posttreatment voices as significantly less breathy and strained. However, comparison of pretreatment and posttreatment maximum phonation times, acoustic measures, and laryngeal images did not reveal significant changes. Conclusions: These preliminary data suggest that vocal function exercises produce significant functional and perceptual improvements in voice, and deserve further attention as a treatment for elderly patients with presbylaryngis.
Intensive voice treatment (LSVT® LOUD) for dysarthria secondary to stroke.
Citation: Journal of Medical Speech-Language Pathology, 2009, vol./is. 17/4(165-182),
Author(s): Mahler LA, Ramig LO, Fox C
Abstract: Stroke is an increasing cause of disability in the United States. The frequent occurrence of communication disorders following stroke make the selection of appropriate treatment strategies of critical importance. This was a Phase I study to detect whether there was a positive treatment effect of intensive voice training (LSVT® LOUD) on two individuals with dysarthria secondary to chronic stroke. Data were collected using an A-B-A-A single subject design with three pre-, two post-, and two follow-up evaluations at 4 months following treatment. Vocal sound pressure level (SPL) changes for sustained phonation, monologue, reading, and picture description indicated increased vocal SPL following intensive treatment that was maintained at follow-up. Five listeners completed auditory-perceptual analyses of pre-and posttreatment speech samples for understandability (articulation clarity) and functional communication preference. Listeners preferred posttreatment speech samples of one participant but rated the posttreatment speech samples for the second participant as similar or worse. The second participant had greater language deficits than the first, which may have influenced listeners’ ratings of speech characteristics. Both participants and family members reported positive outcomes of treatment on functional communication rating scales and in posttreatment interviews. The application of intensive voice treatment to improve functional communication in individuals with dysarthria secondary to stroke is discussed.

Intensified voice therapy: a new model for the rehabilitation of patients suffering from functional dysphonias.
Citation: International Journal of Rehabilitation Research, 01 2009, vol./is. 32/4(348-355),
Author(s): Fischer MJ, Gutenbrunner C, Ptok M
Abstract: The objective of this study was to evaluate a new intervention for chronic dysphonias, consisting of a 2-week outpatient treatment period using intensified voice therapy combined with elements of physical medicine, including physiotherapy (orthotherapy, detonisation and training of the trunk muscles, respiratory therapy and others), manual therapy (mobilization of the cervical spine), inhalations, vibration massages, thermotherapy, classical massages and active relaxation (e.g. autogenic training, progressive muscle relaxation). In addition, the autonomous regulation was influenced by hydrotherapy according to Kneipp. A handicap questionnaire was given to 37 patients with diverse aetiologies of dysphonia before and after intervention. The change score was compared between baseline handicap levels (none, mild, moderate, severe), and between patients with organic and functional dysphonias. The questionnaire was also given to 40 healthy volunteers for comparison with patients’ baseline values. Overall handicap was significantly reduced in patients with moderate baseline handicap values, whereas no significant changes could be detected in patients with severe handicap; patients with mild handicap values did receive some benefit. A significant difference in the intervention outcome was found between patients with organic and functional dysphonias. In conclusion, the results suggest that ambulatory rehabilitative measures are most effective in patients with moderate functional dysphonias, and that severe dysphonias with organic backgrounds may require longer rehabilitation phases.
The applicability of the Dysphonia Severity Index and the Voice Handicap Index in evaluating effects of voice therapy and phonosurgery.

Citation: Journal of Voice, 01 March 2009, vol./is. 24/2(199-205), 08921997

Author(s): Hakkesteegt MM, Brocaar MP, Wieringa MH

Abstract: The objective was to investigate the applicability of the Dysphonia Severity Index (DSI) and the Voice Handicap Index (VHI) in evaluating effects of intervention between groups of patients and for intrasubject differences and whether DSI and VHI are complementing measurements. Analyses of measurement data before and after intervention of 171 patients with voice disorders. The voice quality was measured objectively with the DSI. The perceived voice handicap was measured with the VHI. Three groups of patients were used: patients who had voice therapy, phonosurgery, or no intervention. DSI and VHI improved significantly after intervention in the voice therapy and the surgery group (median difference DSI 1.19 and 3.03, VHI -8 and -26, respectively). The intrasubject results were analyzed based on the test-retest variability of DSI and VHI. Significant better DSI and VHI scores after intervention were found in, respectively, 22% and 38% of the patients with voice therapy, and 56% and 78% of the patients with surgery. In the no intervention group, this was 11% and 12%. In 37% of the patients, the differences before and after intervention in DSI and VHI were in discordance. The DSI and VHI are able to show significant differences after intervention for voice disorders between groups of patients. The DSI and VHI can be used to determine a significant intrasubject result of intervention. The DSI and VHI measure each different aspects of the voice and are complementing measurements. The DSI is therefore applicable in clinical practice for objective evaluation of voice quality and the VHI for subjective evaluation of the perceived handicap by the patient self.

Vocal improvement after voice therapy in unilateral vocal fold paralysis.

Citation: Journal of Voice, 01 January 2008, vol./is. 22/1(113-118), 08921997

Author(s): Schindler A, Bottero A, Capaccio P, Ginocchio D, Adorni F, Ottaviani F

Abstract: SUMMARY: Unilateral vocal fold paralysis (UVFP) is associated with changes in acoustic and aerodynamic voice measurements and can have a significant impact on a patient's quality of life. Few objective data regarding the efficacy of voice therapy for UVFP exist. The aim of this study was to retrospectively analyze voice modifications in a group of patients with UVFP before and after voice therapy. Forty patients with UVFP of different etiology were included in the study. Each subject had voice therapy with an experienced speech/language pathologist twice a week; the mean number of sessions was 12.6. A multidimensional assessment protocol was used; it included videendoscopy, the maximum phonation time (MPT), the GIRBAS scale, spectrograms and a perturbation analysis, and the Voice Handicap Index (VHI). Pre- and posttreatment data were compared by means of the Wilcoxon and Student's t tests. A complete glottal closure was seen in 8 patients before voice therapy and in 14 afterward. Mean MPT increased significantly. In the perceptual assessment, the difference was significant for five out of six parameters. A significant improvement was found on spectrographic analysis; as for perturbation analysis, the differences in jitter, shimmer, and noise-to-harmonic ratio values were significant. VHI values showed a clear and significant improvement. A significant improvement of voice quality and quality of life after voice therapy is an often reached and reasonable goal in patients with UVFP.
The effectiveness of voice therapy for teachers with dysphonia.

Citation: Folia Phoniatrica et Logopaedica, 01 April 2008, vol./is. 60/3(134-141), 10217762

Author(s): Niebudek-Bogusz E, Sznurowska-Przygocka B, Fiszer M, Kotylo P, Sinkiewicz A

Abstract: OBJECTIVE: An incorrect voice emission is a risk factor for developing occupational voice disorders. The study aimed at assessing the effectiveness of voice therapy in female teachers with dysphonia. METHODS: The study comprised 133 subjects with voice disorders, taking part in a vocal training programme. A reference group for the present study included 53 teachers with dysphonia. Questionnaire surveys, phoniatric examination and videostroboscopic evaluation were conducted at initial and control examination. RESULTS: In the study group, an improvement after the vocal training was noted in most of the reported symptoms and also in some quantitative parameters of phoniatric examinations compared to the findings for the reference group. The number of patients who assessed their voice as normal increased significantly after the vocal training (2.3 vs. 46.6%). A significant increase in the mean maximum phonation time, from 13.3 to 16.6 s, was observed. The same applied to voice frequency range (increase from 171 to 226.8 Hz). CONCLUSIONS: The outcomes of vocal training, such as a subjective improvement of voice quality and an increase in the quantitative parameters (prolonged maximum phonation time, extended voice range) seem to be important parameters for monitoring the effectiveness of training in correct voice emission.

Outcomes of voice training in clients with Parkinson's disease.

Citation: Asia Pacific Journal of Speech, Language & Hearing, 2008, vol./is. 11/2(89-102),

Author(s): Gupta J, Scholl D, Toynton R

Abstract: Parkinson's disease (PD) is the most common neuromuscular disease in Australia with over 300,000 adults affected. This paper explores (a) the best way to market speech pathology services for people with PD, (b) whether group voice training is as effective as individual voice training, (c) whether nonintensive voice training produces significant change in measures of maximum phonation duration (MPD), phonation pitch range, loudness in sentences, paragraph reading, and in monologue, (d) whether carryover effect outside the training session exist, and (e) whether improved voice loudness is sustained for a period of time with minimal follow-up training session. The study design is a post hoc analysis of preliminary data collected from ongoing clinical services. We measured MPD in seconds at natural pitch, lowest and highest sustained pitch, MPD pitch range in hertz, and loudness in decibels for MPD, sentence and paragraph reading, and monologue. We found educating the PD support group resulted in improving referrals to the speech pathology service. Overall outcomes on paired sample T-test for Group 1 and Group 3 were significant (p <0.05) but Group 2 was not significant. Generalization outside the clinical sessions was reported incidentally by client's carers. We conclude that providing nonintense (weekly) voice training program in a group is effective and should be considered as an alternative to the well-established intense (4 times a week) Lee Silverman Voice Training (LSVT) program.

A review of patient adherence to the recommendation for voice therapy.

Citation: Journal of Voice, 01 March 2008, vol./is. 22/2(192-196), 08921997

Author(s): Portone C, Johns MM III, Hapner ER

Abstract: Voice therapy is a preferred treatment for many voice problems. Many patients referred to voice therapy by their otolaryngologist fail to follow through with the recommendation. Unlike other behavior change therapies, there are no studies documenting the incidence of poor patient attendance in voice therapy. The primary purpose of this study was to document initial patient adherence to the physician's recommendation for voice therapy. A retrospective review of 294 cases was conducted at 2 voice institutions in Atlanta, GA. Reviews included adherence to (1) the physician's referral to the speech-language pathologist and (2) the speech-language pathologist's recommendation for follow-up voice therapy. Thirty-eight percent of patients did not adhere to the physician's recommendation to attend voice therapy. Of those who initiated follow-through, 47% did not return after the initial speech-language pathology evaluation session. There was no significant difference in
attendance by gender or by age group. The primary reasons reported for nonattendance were insurance denials, resolution of the problem, and distance to the clinic. The attendance rates described in this study were low but consistent with research published in the fields of otolaryngology, gastroenterology, and psychology. Poor patient attendance is an important area to consider in outcomes research and the cost to healthcare.

**Transtheoretical model of health behavior change applied to voice therapy.**

*Citation:* Journal of Voice, 01 November 2008, vol./is. 22/6(688-698), 08921997  
*Author(s):* van Leer E, Hapner ER, Connor NP  
*Abstract:* Studies of patient adherence to health behavior programs, such as physical exercise, smoking cessation, and diet, have resulted in the formulation and validation of the Transtheoretical Model (TTM) of behavior change. Although widely accepted as a guide for the development of health behavior interventions, this model has not been applied to vocal rehabilitation. Because resolution of vocal difficulties frequently depends on a patient's ability to make changes in vocal and health behaviors, the TTM may be a useful way to conceptualize voice behavior change processes, including the patient's readiness for change. The purpose of this paper is to apply the TTM to the voice therapy process to: (1) provide an organizing framework for understanding of behavior change in voice therapy, (2) explain how treatment adherence problems can arise, and (3) provide broad strategies to improve treatment adherence. Given the significant role of treatment adherence in treatment outcome, considering readiness for behavior change should be taken into account when planning treatment. Principles of health behavior change can aid speech pathologists in such understanding and estimating readiness for voice therapy.

**The short- and long-term effectiveness of the LSVT for dysarthria following TBI and stroke.**

*Citation:* Brain Injury, 01 April 2008, vol./is. 22/4(339-352), 02699052  
*Author(s):* Wenke RJ, Theodoros D, Cornwell P  
*Abstract:* Objectives: To examine the effectiveness of Lee Silverman Voice Treatment (LSVT(R)) for the treatment of 10 individuals with dysarthria following TBI and stroke. Research design: ABAA experimental research design. Methods: Participants received 4 weeks of the standard LSVT(R) programme. To measure the effects of intervention, participants were assessed using perceptual and acoustic speech measures and everyday communication outcome measures prior to, immediately post and 6 months post-treatment. Results: Following treatment, participants demonstrated statistically and clinically significant improvements to several acoustic and perceptual parameters. This included increased vocal loudness in sustained phonation and connected speech, increased vocal frequency range and improved word and sentence intelligibility. Improved ratings of communication initiation and participation and well-being were also found on the AusTOMs and items on participant questionnaires post-LSVT(R). The majority of treatment effects were maintained 6 months following treatment. Conclusions: LSVT(R) has the potential to be a viable treatment option for individuals with dysarthria featuring respiratory-phonatory impairments following TBI and stroke.

**Voice therapy improves quality of life in age-related dysphonia: a case-control study.**

*Citation:* Journal of Voice, 01 January 2008, vol./is. 22/1(70-74), 08921997  
*Author(s):* Berg EE, Hapner E, Klein A, Johns MM 3rd  
*Abstract:* SUMMARY: The objective of the study is to determine the efficacy of voice therapy in the treatment of age-related dysphonia. The study was conducted using a retrospective case-control chart review. The medical records of 54 patients older than 60 years diagnosed with age-related dysphonia without complicating diagnoses were reviewed. Patients who chose to undergo voice therapy were grouped as cases. Patients who chose not to undergo voice therapy were grouped as controls. The voice-related quality of life (VRQOL) measure was used to measure outcomes before and after treatment in cases and at a minimum 2-month follow-up in controls. Of the 54 patients, 19 (10 female, 9 male; mean
Six patients (3 female, 3 male; mean age 66 years) chose not to undergo voice therapy and filled in >1 VRQOL questionnaire. The six controls experienced a mean change in VRQOL score of 0.42 (2-tailed matched pairs t test P=0.96) after a mean of 3.3 months. Voice therapy leads to statistically significant improvement in the VRQOL life in elderly patients with age-related dysphonia. It is an efficacious noninvasive therapy for this disease.

Facilitating behavioral change in voice therapy: the relevance of motivational interviewing.

Citation: American Journal of Speech-Language Pathology, 01 August 2006, vol./is.
Author(s): Behrman A
Abstract: PURPOSE: The purpose of this article is to present an exploration of some of the issues surrounding adherence to vocal behavioral change in voice therapy within the context of Motivational Interviewing (MI) and to explore MI's potential for integration into voice therapy (MI-adapted voice therapy). MI is a style of interpersonal communication in which resistance is minimized through the use of skillful listening in a directive, constructive discussion about behavior change. The goal of MI-adapted voice therapy is to enhance patient adherence to vocal behavioral change. METHOD: A narrative review of the literature is presented, together with the experiences of the author with 10 adult patients with voice disorders who participated in MI-adapted voice therapy. RESULTS: It is shown that the principles of MI can be applied throughout the therapy program. Points of resistance to vocal behavioral change that were common across many patients appeared to be addressed appropriately by specific MI dialogue strategies. CONCLUSIONS: It is concluded that MI-adapted voice therapy holds promise as an approach to address patient adherence to vocal behavioral change. However, research is necessary to define the efficacy of this approach and the factors associated with its efficacy.
Available from EBSCOhost in American Journal of Speech-Language Pathology

Voice outcome measures: correlations with patients' assessment of their condition and the effectiveness of voice therapy.

Citation: Logopedics Phoniatrics Vocology, 01 February 2006, vol./is. 31/1(23-35),
Author(s): Fulljames N, Harris S
Abstract: This study investigated correlations between voice outcome measures. Participants' ratings from the Voice Handicap Index (VHI) and a self-rating scale of vocal impairment (SRS) were compared with perceptual assessment (using GRBAS) and acoustic analysis of sustained vowels and connected speech. The measures were taken from ten female participants, pre- and post-therapy. Correlations between pre-therapy measures were generally stronger than between post-therapy measures; and parameters significantly related to participants' assessment of their condition differed from those related to participants' perceptions of improvement. Within the framework of the importance of multidimensional outcome measures, it is recognized that interdimensional relationships need not necessarily exist. For certain parameters, this appeared to be the case.
Available from EBSCOhost in Logopedics Phoniatrics Vocology
The effectiveness of group therapy for students with mild voice disorders: a controlled clinical trial.

**Citation:** Journal of Voice, 01 March 2006, vol./is. 20/1(97-109), 08921997

**Author(s):** Simberg S, Sala E, Tuomainen J, Sellman J, Rönnemaa AM

**Abstract:** Previous studies of students studying to be teachers have indicated that these students commonly have voice disorders. Ideally, voice disorders should be treated before students start their work as teachers, but the resources for this treatment are often limited. This study examines whether group voice therapy is effective for teacher students. Accordingly, 20 teacher students with mild voice disorders received group voice therapy (in three small groups), whereas 20 students with similar voice disorders served as a control group and consequently did not receive voice therapy. Two out of three outcome measures (perceptual evaluation of voice quality and a questionnaire on the occurrence of vocal symptoms) indicated significant changes in the treatment group compared with the control group. No differences between groups were noted in the laryngeal status. The results suggest that group voice therapy seems to be an effective method to treat students with mild voice disorders.

Voice therapy for hormonal dysphonias

**Citation:** Japan Journal of Logopedics and Phoniatrics, January 2005, vol./is. 46/1(16-20),

**Author(s):** Kusuyama T., Fujimoto Y., Sato M., Ito T., Isogai Y., Niimi S., Fukuda H.

**Language:** Japanese

**Abstract:** "Hormonal dysphonias" are induced by hormonal supplements containing virilizing agents, which are mainly androgens and anabolic steroids. Recently hormonal medicine tends to be administered extensively. We have treated 8 cases diagnosed as hormonal dysphonia in the past 2.5 years. Laryngostroboscopy revealed reduction of the mucosal wave of the vocal fold in 4 cases, in all of whom speaking pitch level and voice range (highest and lowest tone) became lower. Voice therapy in accordance with vocal function exercises was given to 5 cases who requested treatment. All exhibited marked improvement in voice. The mucosal wave of the vocal fold recovered with voice therapy in 3 of the 4 cases after withdrawal from hormonal medication.

Parkinson's disease: speech and voice disorders and their treatment with the Lee Silverman Voice Treatment.

**Citation:** Seminars in Speech & Language, May 2004, vol./is. 25/2(169-80), 0734-

**Author(s):** Ramig LO, Fox C, Sapir S

**Abstract:** Speech and voice disorders are very common among individuals suffering from idiopathic Parkinson's disease. In this article we review evidence for laryngeal, respiratory, articulatory, and velopharyngeal disorders in this population. We present the essential concepts and outcome data for the Lee Silverman Voice Treatment, a behavioral treatment program that has yielded significant long-term improvement in speech and voice functions in individuals with idiopathic Parkinson's disease. Copyright 2004 Thieme Medical