






Proposal for a Voice and Swallowing Rehabilitation Program for Adults (VSRP)

Proposta de um programa de reabilitação de voz e deglutição em adultos (PRVD)

Propuesta de programa de rehabilitación y degluttación de la voz para adultos (PRVD)

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Abstract

Most of the patients admitted to the CER II Derdic/PUC-SP Orofacial Motricity and Voice Service for speech therapy assessment and intervention have some hearing and communication difficulties. Given the characteristics of the service offered by the SUS, namely the high demand for patients, the few places on offer, the limited space and the short time available for intervention, group rehabilitation proposals with structured exercise programs have proved to be very useful, with satisfactory results both in terms of welcoming a greater number of people and in terms of the effectiveness of the treatment offered. The aim of this Communication is to present an Adult Voice and Swallowing Rehabilitation Program for patients with phonation and swallowing difficulties due to presbyphonia, presbyphagia, dementia, dysarthria, dyspraxia, dysphonia and dysphagia to improve their quality of life. The program was developed based on the experience of professionals at CER II Derdic/PUC-SP and consultation of specialized literature on the subject. The proposal is that it be applied in groups of eight to ten participants and led by a speech therapist with expertise in the areas of Orofacial motricity and voice, in the format of twelve meetings that bring together strategies for mobilizing structures, progressive muscle training to rescue, improve and provide stability of oral functions, and application of new adjustments acquired in the use of voice and swallowing. The program will then be put into practice to analyze its effects.

Keywords: Speech Therapy; Speech; Voice; Swallowing; Health of the Elderly.

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Authors' contributions:

PPBZ: study design; methodology; communication outline; critical review

MCMB: methodology; communication outline; critical review.

LPF: communication outline; critical review.

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Resumo

A maioria dos pacientes acolhidos no Serviço de Motricidade Orofacial e Voz CER II Deric/PUC-SP para avaliação e intervenção fonoaudiológica, apresenta alguma dificuldade de audição e comunicação. Frente às características do serviço oferecido no âmbito do SUS, a saber, grande demanda de pacientes, poucas vagas oferecidas, espaço limitado e tempo reduzido para a realização da intervenção, propostas de reabilitação em grupo com programas estruturados de exercícios mostram-se bastante proveitosas, apresentando resultados satisfatórios tanto no acolhimento de um maior número de pessoas, como na efetividade do tratamento oferecido. O objetivo desta Comunicação é apresentar um Programa de Reabilitação de Voz e Deglutição em Adultos, a pacientes com dificuldades de fonação e deglutição decorrentes de presbifonia, presbifagia, demência, disartria, dispraxia, disfonía e disfagia para melhorar a qualidade de vida. O Programa foi elaborado a partir da experiência dos profissionais do CER II Deric/PUC-SP e consulta à literatura especializada sobre o tema. A proposição é que seja aplicado em grupos de oito a dez participantes e conduzido por um fonoaudiólogo com conhecimentos nas áreas de motricidade orofacial e voz, no formato de doze encontros que reúnem estratégias de mobilização de estruturas, treino progressivo muscular para resgatar, aprimorar e fornecer estabilidade das funções orais, e aplicação de novos ajustes adquiridos no uso da voz e deglutição. Na sequência, o Programa será colocado em prática para análise de seus efeitos.

Palavras-chave: Fonoterapia; Fala; Voz; Deglutição; Saúde do Idoso.

Resumen

La mayoría de los pacientes que ingresan en el Servicio de Motricidad Orofacial y Voz CER II Deric/PUC-SP para valoración e intervención logopédica presentan alguna dificultad auditiva y de comunicación. Dadas las características del servicio ofrecido por el SUS, alta demanda de pacientes, poca oferta de plazas, espacio limitado y poco tiempo para realizar la intervención, las propuestas de rehabilitación grupal con programas de ejercicios estructurados están resultando muy útiles, con resultados satisfactorios tanto en la acogida de un mayor número de personas como en la eficacia del tratamiento ofrecido. El objetivo de esta Comunicación es presentar un Programa de Rehabilitación de la Voz y la Deglución en Adultos para pacientes con dificultades de fonación y deglución debidas a presbifonía, presbifagia, demencia, disartria, dispraxia, disfonía y disfagia con el fin de mejorar su calidad de vida. El programa fue elaborado a partir de la experiencia de los profesionales del CER II Deric/PUC-SP y de la consulta de literatura especializada en el tema. La propuesta es que sea aplicado en grupos de ocho a diez participantes y conducido por un logopeda experto en las áreas de motricidad orofacial y voz, en el formato de doce encuentros que reúnen estrategias de movilización de estructuras, entrenamiento muscular progresivo para rescatar, mejorar y dar estabilidad a las funciones orales, y aplicación de nuevos ajustes adquiridos en el uso de la voz y de la deglución. A continuación se pondrá en práctica el programa para analizar sus efectos.

Palabras clave: Logopedia; Habla; Voz; Deglución; Salud del Anciano.





Introduction

The Orofacial Motricity (OM) and Voice Service at the Specialized Rehabilitation Centers - CER II Derdic/PUC-SP receives referrals from the SUS [*Unified Health System*] for patients with hearing and communication difficulties arising in the pre-natal, peri-natal, or post-natal periods.

As the aging population becomes more prevalent, there is an increasing demand for rehabilitation among the aging population in both public and private healthcare sectors.

Anatomical and physiological changes occur during the natural aging process, leading to deterioration and compensations in bodily functions^{1,2}.

Transformations occur in chewing, swallowing, and phonation, due to tooth loss, atrophy of the dental alveolus and tongue muscles, decreased muscle mobility, reduced chewing strength, and food bolus propulsion. Inefficiency and incoordination of movements, decreased oronasal and pharyngeal sensitivity, inefficiency in emptying the oral cavity and pharyngeal recesses post-swallowing, reduced elevation and lowering of the larynx^{1,2}, atrophy of the vocal folds, glottic clefts, and changes in the mucosal wave also occur³.

The elderly population is more susceptible to developing communication difficulties, such as dysphonia, dysarthria, dyspraxia, and changes in speech fluency due to neurological and/or feeding disorders. These issues may manifest as frequent choking, episodes of aspiration, pneumonia, weight loss, low food intake, malnutrition, and dehydration^{1,4,5} due to conditions such as stroke (CVA), traumatic brain injuries (TBI), resection of brain tumors, oral cavity and laryngeal cancers, development of degenerative diseases, facial paralysis, and vocal fold paralysis.

Many advancements have been recorded since the early history of Speech-Language Pathology regarding treatments. It should be noted that there has been a better understanding of physiology and the possibility of evidence-based practice due to the development of research in areas such as Anatomy, Neurology, Phonetics, Phonology, Linguistics, Acoustics, and technological advances that currently allow the study of phonatory functions and swallowing^{6,7,8,9}.

Notably, recent studies in exercise physiology have increasingly focused on the rehabilitation

and/or enhancement of phonation and swallowing abilities^{10,11,12}.

Many of the concepts learned and practiced for evaluating and treating the functions of breathing, chewing, swallowing, and phonation have evolved over the years¹³.

To achieve treatment efficacy, the recommendation is that the intervention focus should be on the cause of the alteration. Given the critical importance of being attentive to patients' responses to treatment proposals, therapies with rigid sequences may not be effective¹³.

Despite the lack of scientific evidence that oral motor exercises can help people with speech problems, they have played an important role in the therapy of dysphagia and snoring¹³.

Muscle training aims to improve strength, mobility, and coordination of movements. The learning stage of new adjustments to orofacial functions will be followed by the automation of these functions for spontaneous execution, requiring patient monitoring to ensure the effectiveness of adaptations and balance. The literature highlights the orofacial myofunctional therapy approach as the most comprehensive¹⁴.

For stabilizing a function, it is essential that the professional, together with the patient, develops not only the ability to perform the movement but also the possibility of practicing the function safely. If necessary, assisted and adapted, but sufficient for the patient to perform it autonomously.

The communication and nutrition difficulties of the cooperative elderly go beyond aphasia, dysphonia, or dysphagia, as there are both clinical and social implications.

It is crucial to consider a detailed understanding of the elderly patient's profile and associated diseases, as this is the only way to intervene satisfactorily and provide comfort and quality of life for those who often can no longer effectively communicate their difficulties¹⁵.

The professional attending to an elderly patient should not only aim to eliminate or minimize the risks of aspiration, malnutrition, and dehydration but also to promote the quality of life of the patient so that they can rehabilitate. Therefore, managing these conditions requires a combination of clinical and scientific knowledge. Preserving cognitive function is essential and necessary for the execution of certain strategies¹⁵.



The application of treatment with the appropriate technique choices should be based on a thorough clinical evaluation by the speech-language pathologist in collaboration with the patient, supplemented by data provided by the healthcare team.

Among the possibilities for intervention in rehabilitation, the OM and Voice Service has developed, over the years, strategies and tools that enable not only emergency care but also medium and long-term support through diverse practices (individual and group sessions, arts and choir workshops, online care, and the production of orientation materials in the form of brochures and videos), which promote patient adherence and the engagement of their families in the process^{16,17,18,19,20,21,22}.

The authors selected scientific texts that demonstrated the effectiveness of progressive muscle training to support, maintain, and optimize the performance of stomatognathic functions, improving movement amplitude, strength, and endurance. Consequently, it is expected that these patients will experience an improvement in quality of life and reintegration into society^{10,23,24,25}.

Clinical practice is further enhanced by the integration between the work carried out by the aforementioned service, the Undergraduate Course in Speech-Language Pathology, and the Graduate Program in Human Communication and Health, which has enabled new advancements. This has been possible not only because of the curricular courses that take place in this space but mainly due to the projects planned and executed collaboratively.

The approach proposed below is based on the proponents' extensive clinical experience and the service's demand, which, as mentioned earlier, is part of the SUS [*Unified Health System*].

Description

Based on the literature presented in the Introduction, a proposal was developed called the Voice and Swallowing Rehabilitation Program for Adults (VSRP), specifically for patients with communication and swallowing disorders resulting from natural aging, leading to presbyphonia and presbyphagia, or due to conditions such as dysphagia, dementia, dysarthria, dyspraxia, dysphonia, and speech fluency disorders caused by acquired neurological lesions. The program aims to improve

quality of life through a speech-language pathology intervention protocol.

This program was developed based on practical experience in treating elderly patients at the CERII Derdic/PUC-SP, which led the authors to create a group speech-language pathology intervention approach, which was designed to accommodate a population that, in addition to needing immediate individual care upon arrival at the institution, requires long-term exercise maintenance to sustain the longevity of stomatognathic functions, with particular emphasis on swallowing and phonation concerning voice quality.

The proposal aims to conduct a progressive training of orofacial and myofunctional skills involving the practice of exercises designed to improve and stabilize muscle mobility and resistance, motor coordination, and the execution of phonation and swallowing functions.

The development of a therapeutic program helps to systematize clinical procedures by prioritizing objectives¹⁴. When applied in small groups of eight to ten patients, individuality can be ensured according to the responses presented and the objectives to be developed regarding self-perception, adaptations, and limitations.

The program will be detailed below, considering the content to be developed in each session. It is important to note that, although there is no unanimity among researchers regarding the type of exercises to be used, the quantity, duration, and number of repetitions to develop muscle conditioning, in Speech-Language Pathology, at least 20 seconds or 20 repetitions are recommended²⁶.

The intensive and progressive training period aims to challenge muscle performance by promoting overload, thus encouraging adaptations and adjustments to function more efficiently, becoming more resistant to this type of stimulus¹⁰.

Furthermore, having a structured program can foster greater adherence among participants since it has a beginning, middle, and end. It is also worth noting that organizing the sessions each semester, a period when internships begin and therapists change, facilitates the collection of evolutionary data at the end, which motivates each participant to stay engaged and perform their best while attending the rehabilitation sessions.

The program was developed to be offered in twelve weekly speech-language pathology inter-



vention sessions lasting 60 minutes, preferably in person.

The sessions should be conducted by speech-language pathologists with knowledge in the areas of Orofacial Motricity and Voice. The exercises presented each week should be performed by the patients at home, twice a day, to ensure progress in the necessary adjustments for execution, gains in movement amplitude, resistance, and muscle strength, so that a new exercise or difficulty can be introduced in the following week.

Objectives

The objectives of the training in this Program are supported by the following principles^{10,11,12,20}:

- Mobilize orofacial and laryngeal structures to gain movement amplitude
- Progressively exercise the muscles with repeated contractions for a sufficient period to cause fatigue or maintain prolonged voluntary muscle contraction, to restore and improve the physiological conditions of resistance in the structures involved in the processes of voice production and swallowing
- Maintain the maximum amount of tension during the repetition of a specific exercise to improve strength
- Preserve the longevity of the skills for balanced use of the voice, speech, and safe eating, to prevent and/or minimize the risks of aspiration pneumonia
- Practice, adapt, improve, and provide stability for the functions of breathing, mastication, swallowing, and phonation
- Raise awareness for the development of self-observation and self-perception regarding altered functions
- Promote social inclusion and strengthen the bond between patients, professionals, and caregivers

Procedures

- Facilitate the mobilization of the facial expression muscles and the oral, pharyngeal, and laryngeal structures through neck and shoulder stretching exercises;
- Increase inspiratory and expiratory times in breathing and phonation through inspiratory breathing exercises using the RESPIRON® Classic respiratory incentive and sound-blowing exercises with a semi-occluded vocal tract^{11,12};

- Favor velopharyngeal sphincter closure through the practice of sound-blowing exercises with a semi-occluded vocal tract and whistling;
- Enable airflow control and emission stability by producing prolonged fricative phonemes, both voiced and voiceless, nasal sounds, and lip and tongue vibratory sounds (in monotone and glissando);
- Promote emission stability through the production of syllables, using the push techniques and hyperacute /i/ sound emission^{6,27};
- Enhance articulatory precision through non-verbal praxia training, articulatory diadochokinesis, high-intensity²⁸ vowel production, exercises adapted from the Lee Silverman Voice Treatment^{®29}, and automatic speech production with overarticulation;
- Improve swallowing by performing postural maneuvers and techniques to facilitate the elimination of possible food residues in the oral cavity and pharyngeal recesses:

Postural Maneuvers - Neck flexion, extension, rotation, and inclination;

Facilitative maneuvers: Multiple swallows; Mendelsohn maneuver; Massako maneuver; Effortful swallow; Supraglottic swallow; Super-supraglottic swallow; Maneuvers for cleaning the oral cavity and pharyngeal recesses - throat clearing, coughing, and expectoration³⁰.

Precautions and Criteria for Program Implementation

The authors' experience indicates some important observations:

- Select patients to participate in the group using orofacial myofunctional, voice, and general clinical condition assessment protocols;
- Propose rehabilitation strategies for patients with mild alterations in speech, voice, and swallowing who are on an exclusive oral diet;
- Provide participants with an individual RESPIRON® Classic device for performing the Program's respiratory exercises;
- Record the sessions on video to monitor progress and facilitate data collection for potential research;
- Apply self-assessment questionnaires on speech, voice, and food intake quality before and after the Program to compare the two moments;
- Compile difficulties presented by participants and, whenever necessary, make adaptations and



- modifications to the exercises to enable their execution;
- Start each session with a group discussion in which participants can share their achievements and difficulties regarding the challenges proposed in the previous week;
 - Recommend practicing airway protection and swallowing facilitation maneuvers initially with saliva to avoid the risk of choking and/or aspiration. When the patient demonstrates skill and feels confident in performing these maneuvers, they can practice with liquids, soft foods, solids, and later during meals.
 - Suggest performing the exercises twice a day
 - Provide demonstration videos of the exercises and home tasks to encourage better adherence from participants.
- Presentation of the Voice and Swallowing Rehabilitation Program for Adults*

Chart 1. Description of activities to be addressed with participants

1 st Session			
Exercise	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
B) Breathing	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
	Deep inhale and exhale slowly	5x	
C) Lip Mobility and Resistance	Deep inhale and exhale while emitting a prolonged /s/	5x	
	Protrude and stretch the lips	5x	
D) Tongue Mobility and Resistance	Press a spatula between the lips	5x	15s.
	Place a lip resistance plate or button between the inner lips and outer teeth. Press the lips and pull the plate in the opposite direction	5x	15s.
E) Soft Palate Mobility and Resistance	Stick the tongue out and in	5x	
	Touch the tip of the tongue to the left and right corners of the lips	5x	
	Contract the tongue while keeping it inside the mouth	5x	
F) Sustained Emission of Vowels with Strong Intensity	Push the tip of the tongue against a spatula	5x	15s.
	Inflate cheeks and hold breath	5x	15s.
G) Sustained Emission of Vowels with Strong Intensity	Deep inhale and emit vowels opening the mouth wide, one at a time, sustained in monotone and strong intensity /a, e, i, o, u/	3x	8s.
	Deep inhale and emit vowels opening the mouth wide, one at a time, sustained in strong intensity - glissando /a, e, i, o, u/	3x	
2 nd Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
	Blow up the balloon until it is full	5x	





2 nd Session			
Stage	Description	Repetitions	Duration
C) Lip Mobility and Resistance	Protrude and stretch the lips	3x	30s.
	Press a spatula between the lips	3x	30s.
	Place a lip resistance plate or button between the inner lips and outer teeth. Press the lips and pull the plate in the opposite direction	3x	30s.
D) Tongue Mobility and Resistance	Stick the tongue out and in	5x	
	Touch the tip of the tongue to the left and right corners of the lips	5x	
	Contract the tongue while keeping it inside the mouth	5x	
	Push the tip of the tongue against a spatula	5x	30s.
E) Soft Palate Mobility and Resistance	Inflate cheeks and hold breath	10x	15s.
F) Sustained Emission of Voiced Fricative Sounds	Take a deep breath and emit the /v/ sound in a sustained manner – monotone	3x	8s.
	Take a deep breath and emit the /z/ sound in a sustained manner – monotone	3x	8s.
	Take a deep breath and emit the /□/ sound in a sustained manner – monotone	3x	8s.
G) Sustained Emission of Voiced Fricative Sounds	Take a deep breath and emit the /v/ sound in a sustained manner – glissando	3x	
	Take a deep breath and emit the /z/ sound in a sustained manner – glissando	3x	
	Take a deep breath and emit the /□/ sound in a sustained manner – glissando	3x	
H) Resonance Balance	Repeat the months of the year in a chant-like voice.	3x	
3 rd Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Sustained Emission of Vibratory and Voiced Fricative Sounds	Take a deep breath and slowly exhale while sustaining vibratory sounds from lips, or tongue, or voiced fricative sounds /v/, /z/, /□/ in monotone	10x	
D) Sustained Emission of Vibratory and Voiced Fricative Sounds	Take a deep breath and slowly exhale while sustaining vibratory sounds from lips, or tongue, or voiced fricative sounds /v/, /z/, /□/ in glissando	10x	
E) Syllable Repetition	Repeat the syllables [ba da ga, be de gue, bi di gui, bo do go, bu du gu] with strong intensity	5x	
F) Syllable Repetition	Repeat the syllable [gui] in a high-pitched voice	10x	
G) Postural Maneuvers Associated with Swallowing	Flex and turn the head to the left side and then swallow saliva. Repeat the maneuver to the right side.	5x for each side	
4 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	





4 th Session			
Stage	Description	Repetitions	Duration
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 0 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Sustained Emission of Sounds	Emit the prolonged /b/ sound	3 sets of 10x	
	Emit the nasal /m/ sound in a sustained monotone	5x	
	Emit the nasal /m/ sound in a sustained glissando	5x	
E) Postural Maneuvers Associated with Swallowing	Perform laryngeal protection maneuvers during swallowing: Supraglottic and super-supraglottic maneuvers	5x	
5 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 0 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Non-Verbal Praxias	Perform in sequence the movements of lip protrusion, stretching, and popping	3 sets of 5x	
	Perform in sequence the tongue movements of protrusion, retraction, and sweeping of the hard palate	3 sets of 5x	
E) Semi-Occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed two centimeters in water contained in a 500 ml mineral water bottle (1/2 of the utensil space filled with water) in monotone and usual volume	5x	
	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed two centimeters in water contained in a 500 ml mineral water bottle (1/2 of the utensil space filled with water) in glissando and usual volume	3 sets of 5x	
6 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 0 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Non-Verbal Praxias	Perform the movements of lip protrusion to the left and right, and lip trills in sequence	3 sets of 5x	
	Perform the movements of tongue protrusion, retraction, and tip trills in sequence	3 sets of 5x	
E) Over-Articulation of Speech	Count the numbers from 1 to 20 in an exaggerated manner and at a normal speed	3x	
F) Vocal Function Exercises (adapted)	Produce the vowel /o/ extended in ascending and descending glissando	5x	
G) Semi-Occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed two centimeters in water contained in a 500 ml mineral water bottle (1/2 of the utensil space filled with water) in glissando and usual volume	3 sets of 5x	





7 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 0 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Non-Verbal Praxias	Perform the movements of lip protrusion and stretching, and tongue tip trills in sequence	3 sets of 5x	
E) Postural Maneuvers Associated with Swallowing	Execute the Mendelsohn Maneuver	5x	5 s
F) Postural Maneuvers Associated with Swallowing	Swallow with effort	5x	
G) Resonant Balance	Produce the nasal sound /m/ associated with tongue rotation in the vestibule	5x	
H) Soft Palate Mobility and Strength	Practice whistling	5x	15s.
I) Push Technique Associated with Plosive Sounds	Perform air punches while producing the sequence of syllables [ba da ga, bla dla gla, bra dra gra]	5x	
J) Semi-Occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed three centimeters in the water contained in a 500 ml mineral water bottle (1/2 of the utensil filled with water) in glissando and at a habitual volume	3 sets of 10x	
8 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders in both directions	5x	
B) Breathing	Deep inhale and exhale slowly	10 x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 1 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Non-Verbal Praxias	Perform in sequence the movements of lip trills, touching the tip of the tongue to the left and right corners of the lips, and tongue tip trills	3 sets of 5x	
F) Semi-Occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed three centimeters in the water contained in a 500 ml mineral water bottle (1/2 of the utensil filled with water) in glissando and at a habitual volume	10x	
G) Cleaning of Pharyngeal Residues	Spit and/or cough; perform a cough followed by the emission of the vowels /a, e, i, o, u/	5x	
H) Overarticulation of Speech Sounds	Repeat automatic speech, phrases, or tongue twisters while maintaining well-defined articulation of speech sounds		



9 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 1 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Non-Verbal Praxias	Perform in sequence the movements of lip trills, lip protrusion to the right, and tongue suction on the hard palate	3 sets of 5x	
E) Semi-Occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed to the level of four fingers in the water contained in a 500 ml mineral water bottle (1/2 of the utensil filled with water) at a habitual volume – glissando	3 sets of 10x	
F) Postural Maneuvers Associated with Swallowing	Associate maneuvers: Swallowing with effort, Mendelsohn Maneuver, Massako Maneuver, Swallowing with effort, Supraglottic Swallowing, Super-Supraglottic Swallowing	10x	
G) Resonant Balance	Repeat the months of the year and/or other automatism in a salmodic voice	1x	
10 th Session			
Practice the exercises twice a day			
Send videos and homework			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders in both directions	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 1 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	
D) Non-Verbal Praxias	Perform in sequence the movements of lip trills, lip protrusion to the left, and touching the tip of the tongue to the left and right corners of the lips	3 sets of 5x	
E) Semi-Occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed to the level of four fingers in the water contained in a 500 ml mineral water bottle (1/2 of the utensil filled with water) at a glissando and habitual volume	10x	
F) Association of Maneuvers	Associate tongue trills exercises with nasal sound /m/		
G) Maneuvers during swallowing	Swallow with effort	5x	
11 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Breathing	Position the regulator ring of the RESPIRON® Classic respiratory trainer at the effort mark 2 and take a deep breath, pulling the air through the device's mouthpiece.	3 sets of 10x	





11 th Session			
Stage	Description	Repetitions	Duration
D) Non-verbal Praxis Training	Perform in sequence the movements of lip protrusion to the left and right, touching the tip of the tongue to the left and right corners of the lips, and suctioning the tongue on the hard palate	3 sets of 5x	
E) Semi-occluded Vocal Tract Exercise	Vocalize the vowel /u/ in the LaxVox® flexible tube, immersed to the level of four fingers in the water contained in a 500 ml mineral water bottle (1/2 of the utensil filled with water) at a glissando and habitual volume	10x	
F) Adapted Lee Silverman® Method Exercises	Sustain the vowels /a, e, i, o, u/ for the maximum phonatory time and in monotone. Then, perform in ascending and descending glissando. Repeat sentences commonly spoken in daily life with strong vocal intensity.	1x	
G) Postural Maneuvers Associated with Swallowing	Associate maneuvers that proved effective for participants and repeat them	5x	
12 th Session			
Stage	Description	Repetitions	Duration
A) Neck and Shoulder Stretching and Mobilization	Rotate the head to the right and left	5x	
	Rotate the head up and down	5x	
	Tilt the head to the right and left	5x	
	Rotate the head clockwise and counterclockwise	5x	
	Raise and lower the shoulders	5x	
	Rotate the shoulders forward. Rotate the shoulders backward.	5x	
B) Breathing	Deep inhale and exhale slowly	10x	
C) Non-verbal Praxis	Perform in sequence the movements of protruded lip trills, lip protrusion, tongue protrusion, and suctioning the tongue on the hard palate	3 sets of 5x	
D) Development of a Personalized Exercise Program	Create a personalized program by selecting the preferred exercises that proved most effective for each participant.		

Final Considerations

The Voice and Swallowing Rehabilitation Program for Adults is a structured proposal for speech-language pathology intervention. It consists of 12 sessions, each lasting one hour, and includes strategies for mobilizing structures and progressive muscle training to restore, enhance, and stabilize voice and swallowing functions. The program should preferably be conducted by a speech-language pathologist with expertise in orofacial motricity and voice. The program will subsequently be implemented to analyze its effects.

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