



دکتر محمد صادق سیف پناهی

عضو هیات علمی دانشگاه علوم پزشکی همدان
دپارتمان گفتاردرمانی

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تعریف سالمندی

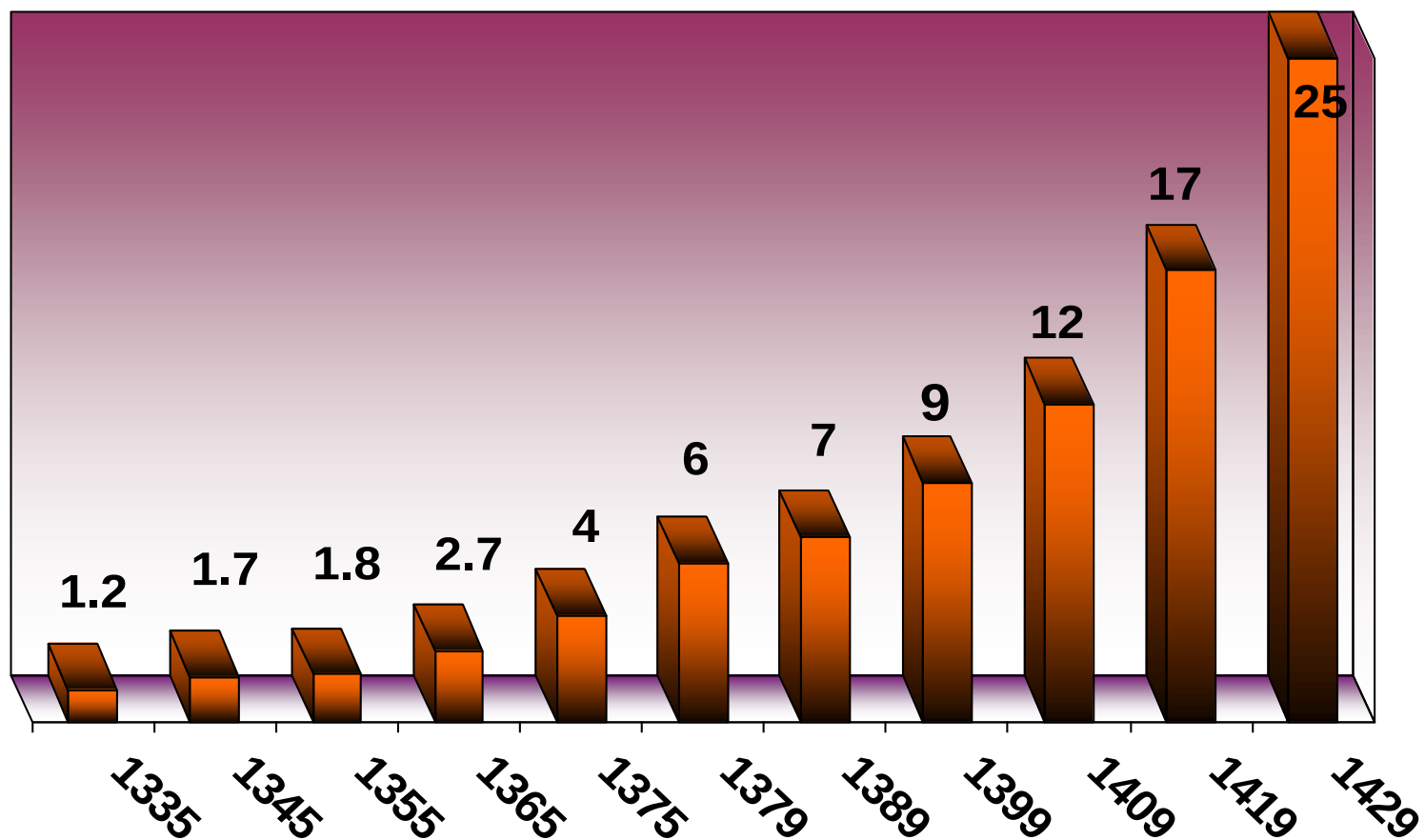
- سالمندی تغییرات دژنراتیو خودبه خودی و پیش رونده غیرقابل برگشت

است که در آن قوای روانی و جسمی هر دو به نحو قابل ملاحظه ای رو به

نقصان می گذارند.

- به دو صورت مرضی و طبیعی

روند تغییرات سالخوردگی جمعیت در ایران گذشته، حال و آینده



Structural changes

- **Lung:**
- decreased force and rate of respiratory muscles
- thorax stiffening
- loss of elasticity of lung tissue
- Results in:→ Decreased Infra-glottis air pressure

Structural changes (continued)

- **Laryngeal:**
 - cartilages calcification
 - Irregularities in arytenoid joints
 - Increase in fatty infiltration and connective tissue
→ Laryngeal Muscles atrophy
 - Decrease TVC flexibility and tension
 - Hormonal Changes
 - Bowing TVC
- **Supraglottic Vocal Tract:**
 - degenerative changes in the palatal and pharyngeal muscles
 - diminished salivary function

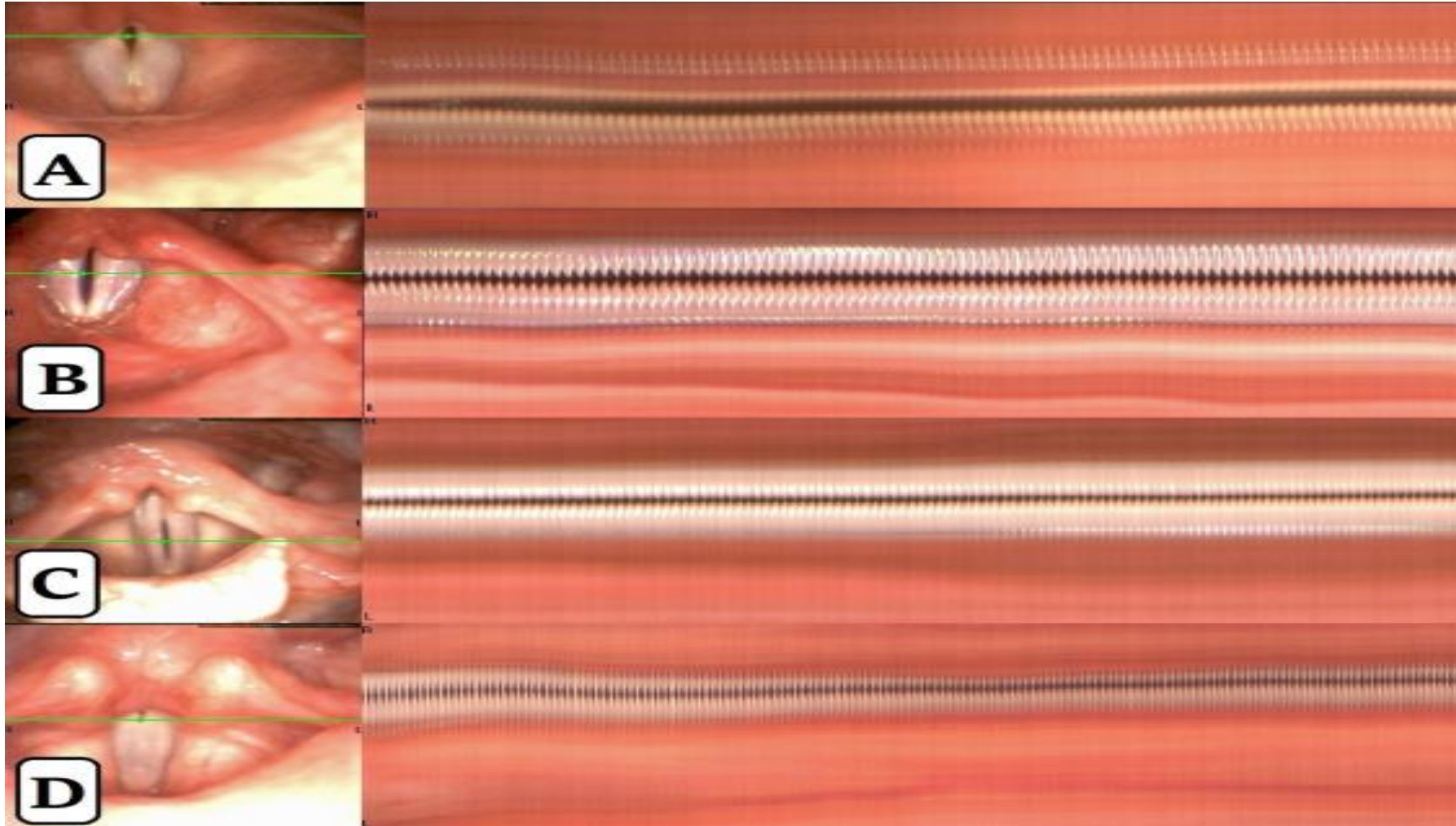
Young adult larynx



Older adult larynx



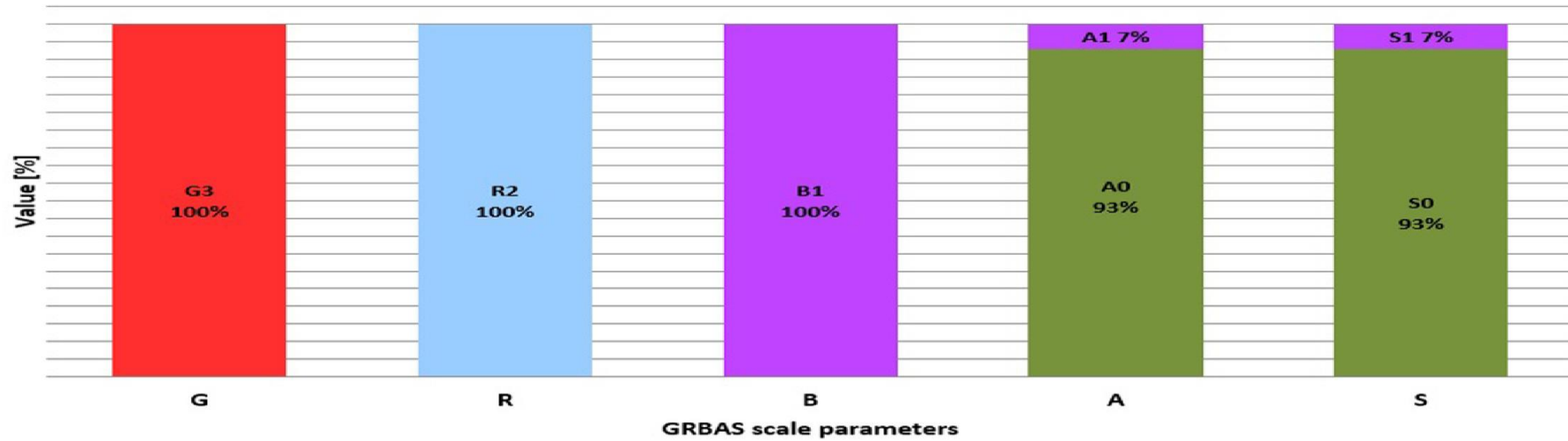
Kymographic examination revealed asymmetry and aperiodicity of vocal folds vibrations



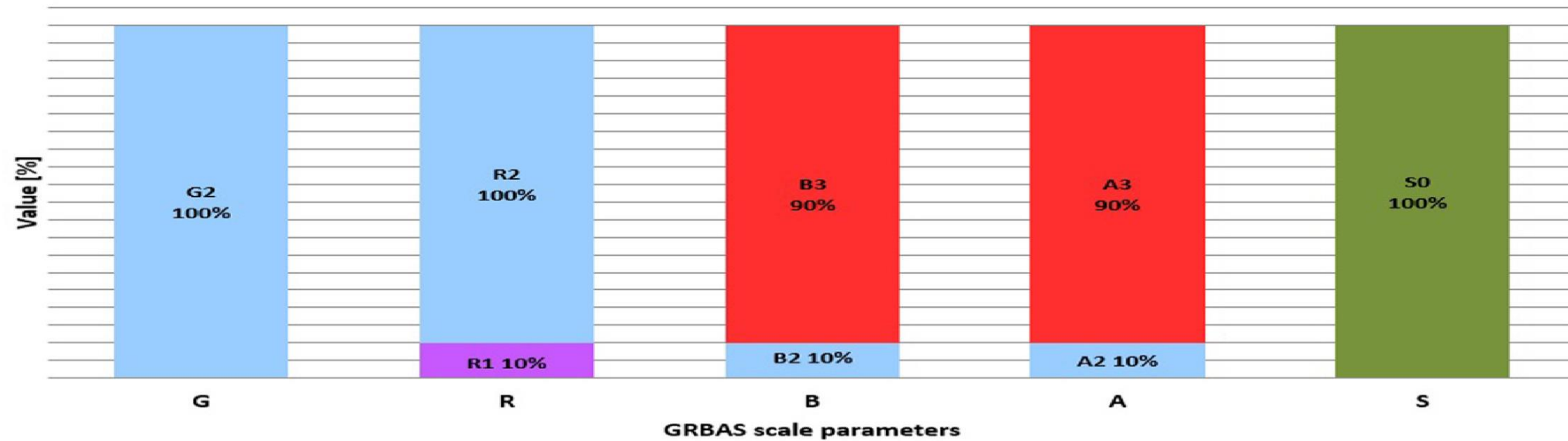
Voice Changes

- Weaker (Asthenic)
- Decreased voice intensity
- Breathier
- Increased Hoarseness, jitter, shimmer, NHR
- Men → High pitch (Atrophy)
- Women → Low pitch (Hormonal changes)
- MPT reduction
- Monotone
- Vocal fatigue
- Secondary MTD
- Elder singers: louder, younger, and clearer voice + stable F0
→ benefit of increased vocal activity for vocal longevity.

GRBAS scale parameters in women in Group I



GRBAS scale parameters in men in Group I



Presbyphonia

20% to 29% prevalence of self-reported dysphonia in several senior independent living communities

- 1) Differential diagnosis:**
 - vocal cord nodules or cysts
 - cancer
 - vocal cord paralysis
 - Progressive Neurogenic voice disorders (Parkinsonism, ALS,...)
 - Depression
- 2) Refer to Speech & Language Pathologist (Voice therapy)**
- 3) If necessary Laryngologist:** injection laryngoplasty (medialization) or bilateral thyroplasty.

Hypokinetic dysarthria (Parkinson)

۱. رفتار صوتي مشابه، افراد مسن
۲. بسامد پایه ← نسبتا بالا و یکنواخت
۳. کاهش بلندي
۴. نفس آلود ← بعلت bowing
۵. کاهش دامنه حرکات (هایپوکینزیا)
۶. قطع جریان گفتار پی در پی (برادی کینزیا).
۷. اگر سرعت گفتار زیاد شود ← گفتار نامفهوم مي شود.
۸. آسیب شدید پرازودی
۹. اگر به این بیماران گفته شود که با لهجه ي متفاوت، زیروبمی متفاوت، با سرعت کم، یا بلند تر حرف بزن ← گفتارشان بهتر مي شود.

Objective acoustic variable to detect hypokinetic dysarthria

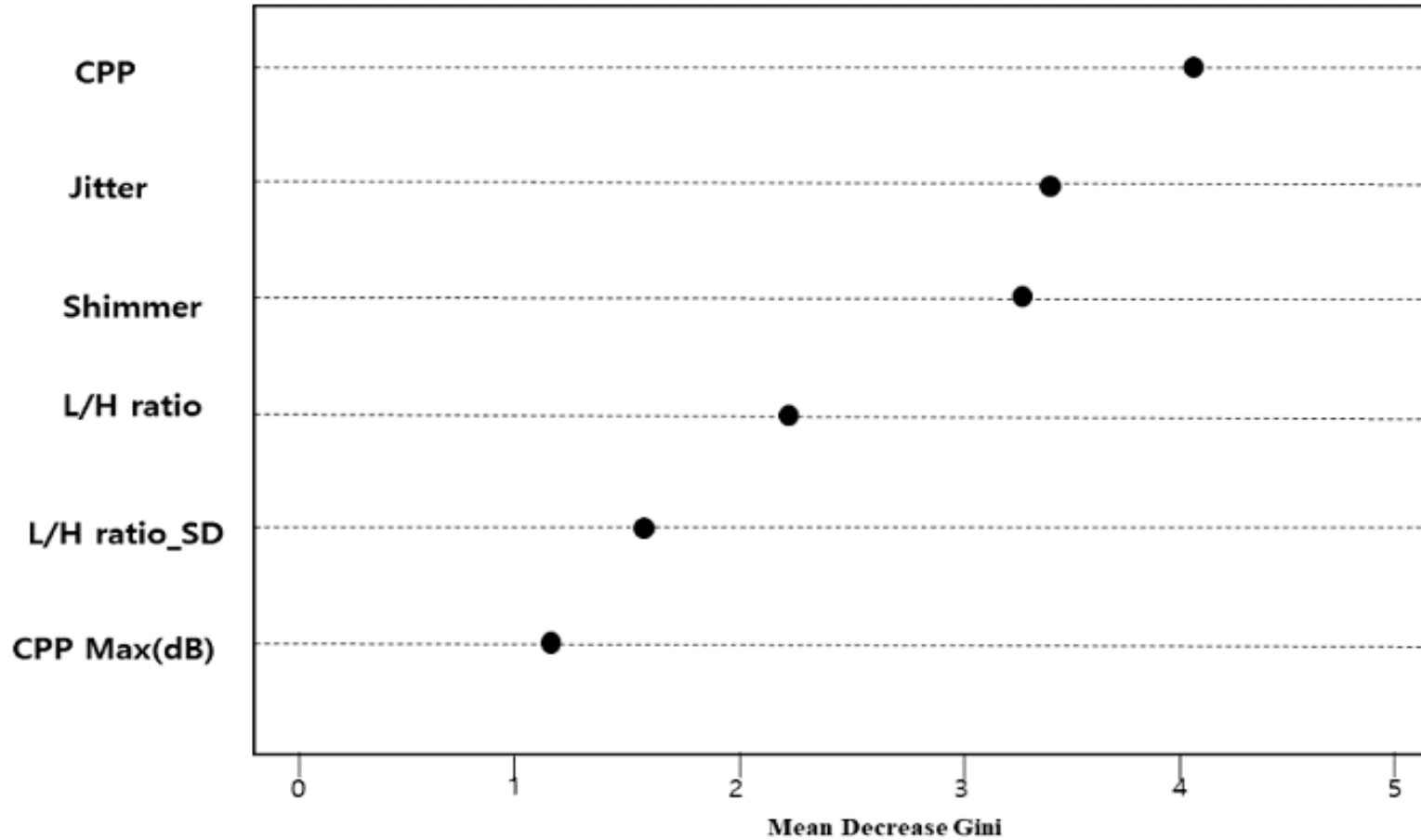


Figure 5. Importance of variables for identifying hypokinetic dysarthria (presenting only the top six variables).

Voice therapy

Voice therapy aims:

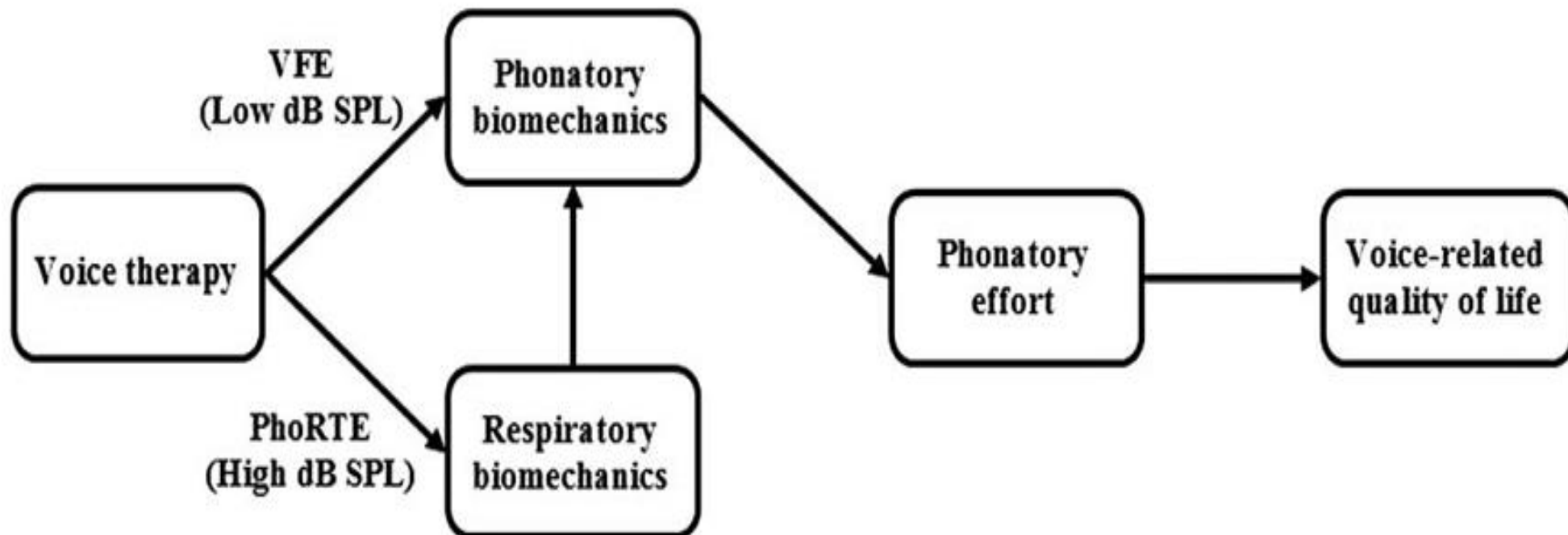
1. Reducing maladaptive compensatory behaviors
2. increasing consistency in voice quality
3. Increasing coordination between speech subsystems:
 - Respiration
 - Phonation
 - Resonance

(Ziegler A, 2014)

1) vocal function exercises (VFE)

2) phonation resistance training exercise (PhoRTE) therapy

Results → improved: TVC adduction, Voice-Related Quality of Life(V-RQOL) questionnaire, acoustic parameters.



Other voice therapy techniques

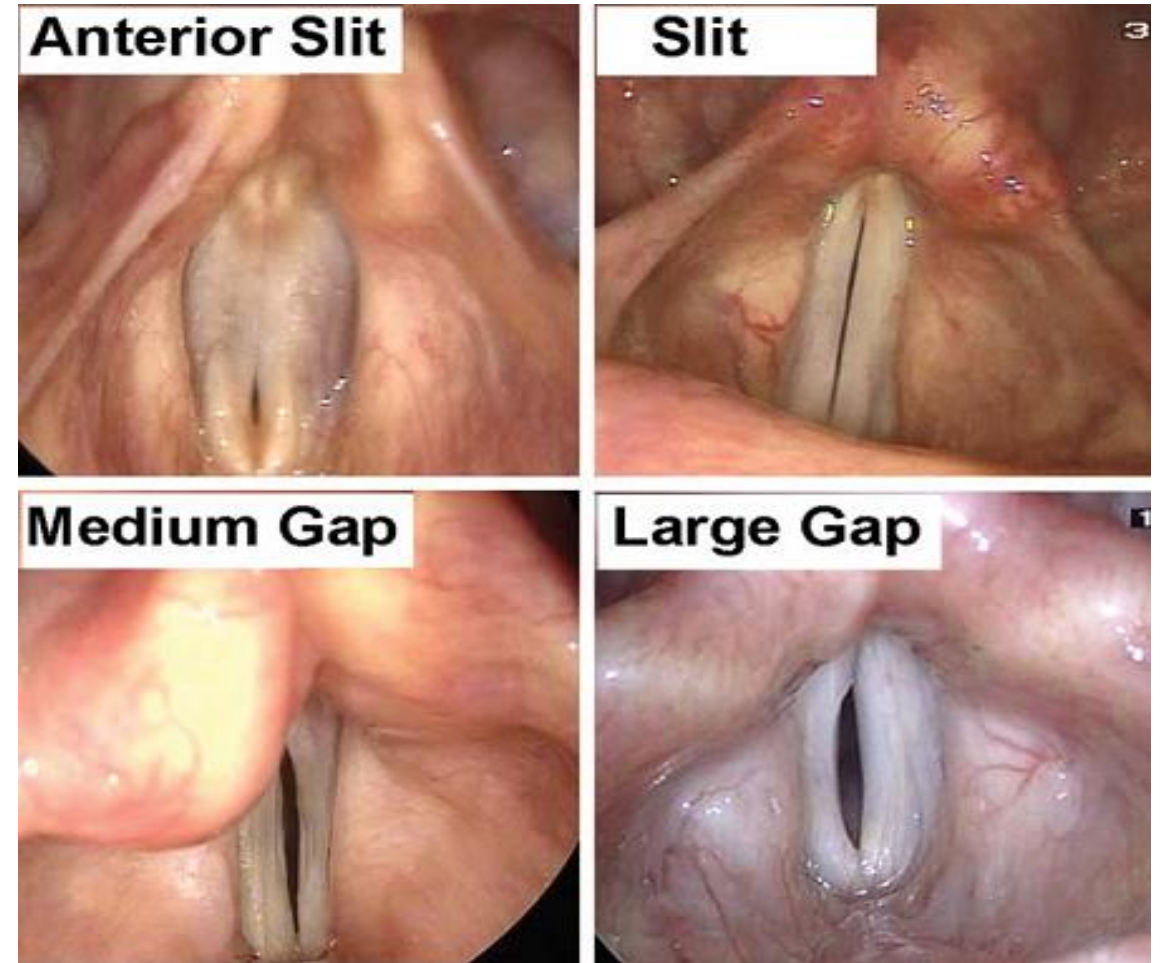
- **Lee Silverman Voice Therapy program** → Prime technique for elders
- Focus
- Laryngeal manipulations
- Chant talk
- Masking
- Biofeedbacks
- Establishing a new pitch
- Hard glottal attacks and pushing
-

Mau T (2010)

- Different voice therapy techniques
- Results:
 - 85% improved
 - sever atrophy or TVC gaps → need Injection medicalization → then: voice therapy

48	Voice Therapy		
6	Voice Therapy	Cymetra	
7	→	Cymetra	
2	→	Cymetra	Thyroplasty
2	→	Cymetra	Fat
2	→		Thyroplasty

Fig. 3. Types of intervention (N = 67).

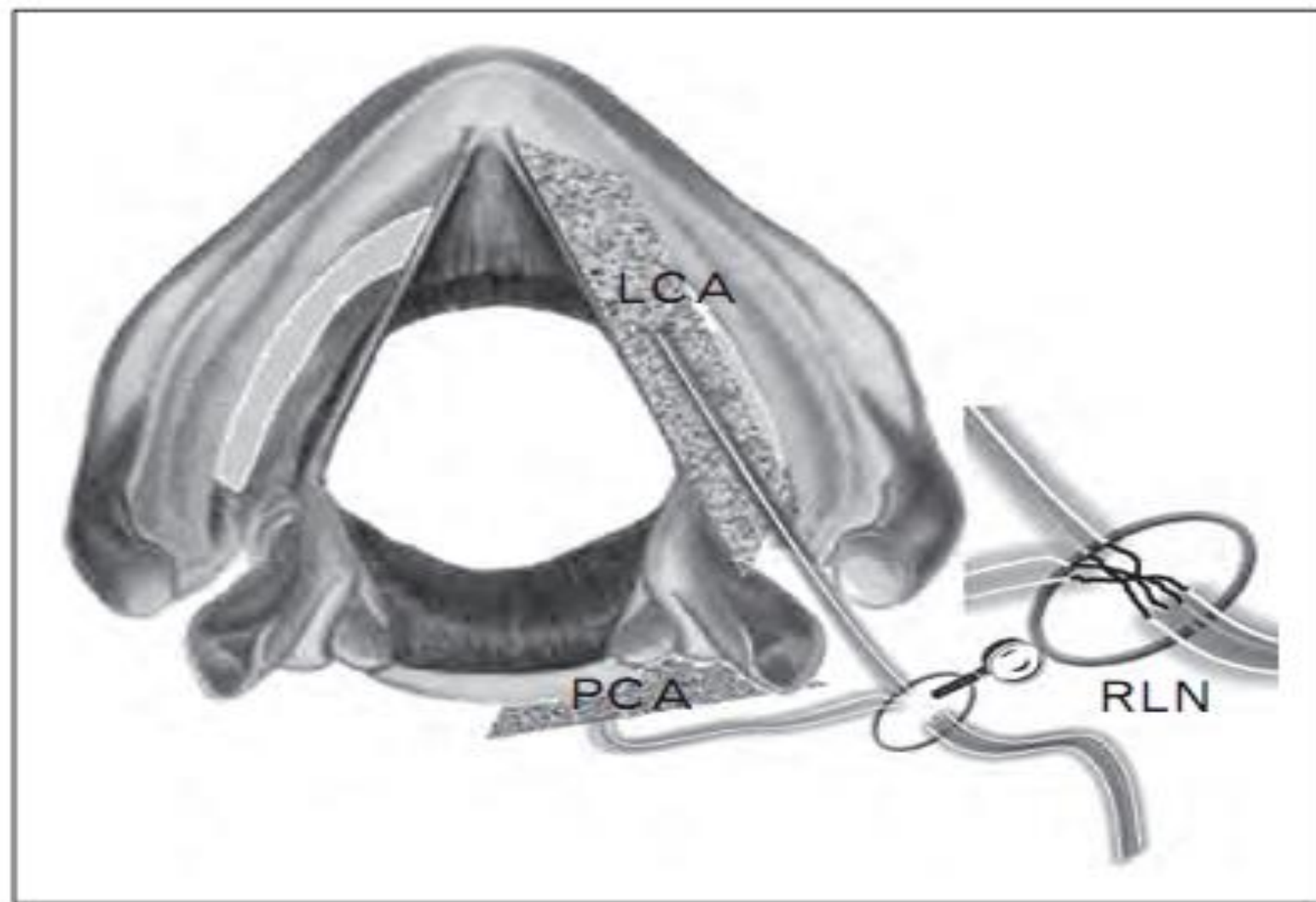


Laryngeal Electrical stimulation (LES)

❑ laryngeal synkinesis

- Crumley (2000)
- intrinsic laryngeal muscular dyssynergy after pathologic variability of reinnervation
- **85% cases:** (Zealear, 2004)
- **vocal fold motion impairment (VFMI)**
 - for any immobility → instead VF paralysis

Figure 1 Misdirected synkinetic reinnervation in recurrent laryngeal nerve paralysis



LCA, lateral cricoarytenoid muscle; PCA, posterior cricoarytenoid muscle; RLN, recurrent laryngeal nerve with damage area and misdirected fibers.

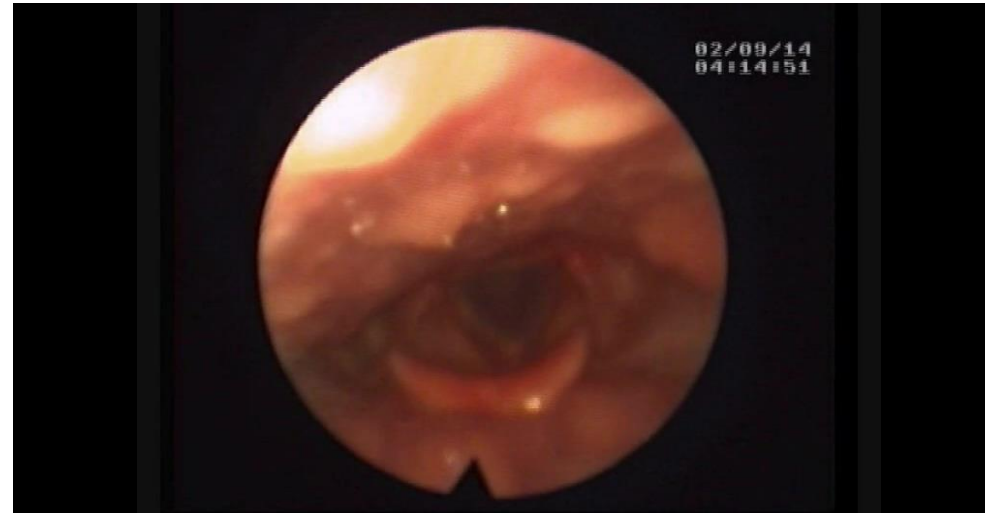
LES aims

1. To prevent **atrophy** of the paretic muscle.
2. To speed up the **regeneration** process.
3. To prevent **fibrillation**.
4. Increasing **range and strength** of TVC
5. **synchrony** of the firings

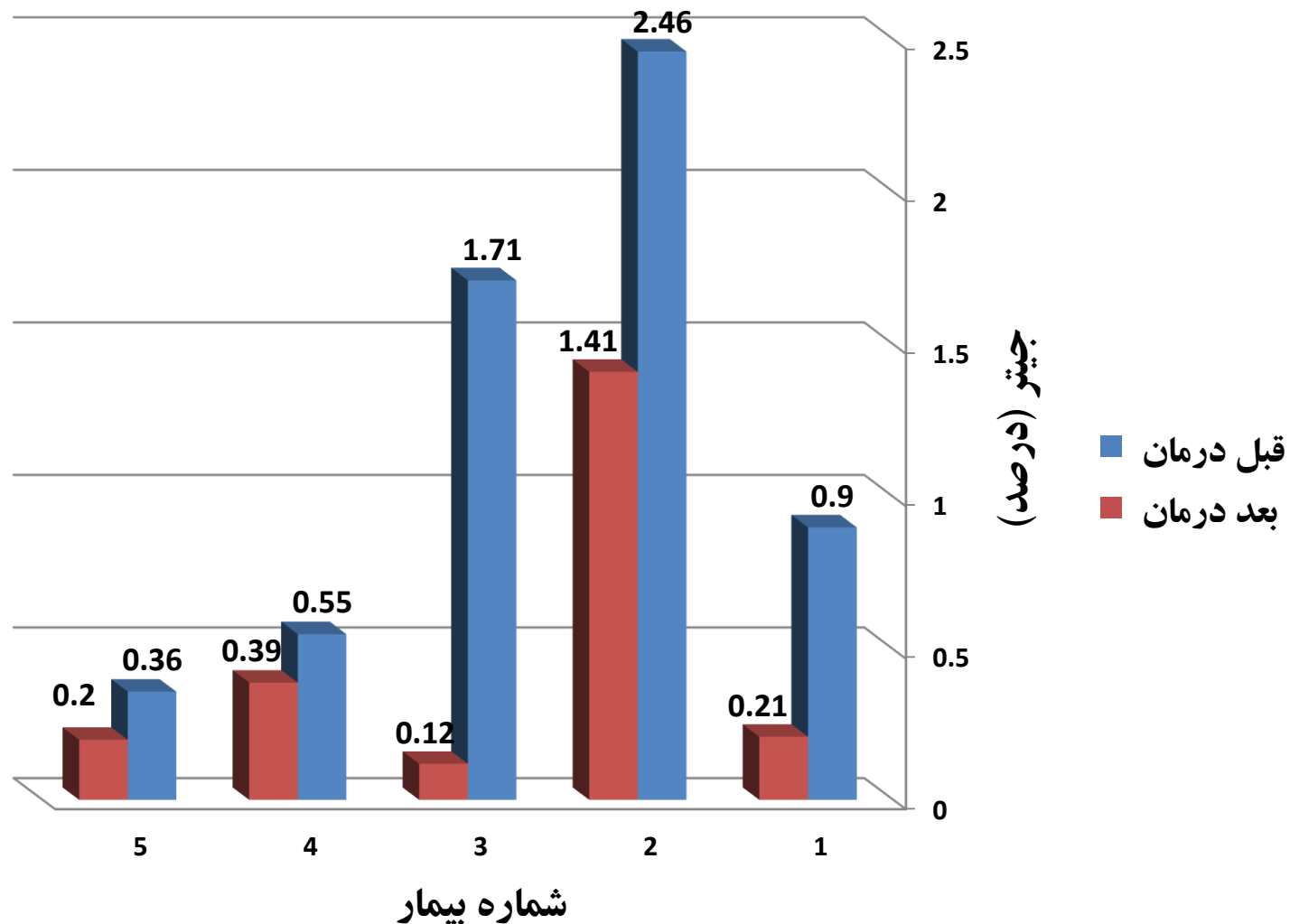
Transcutaneous Electrical Stimulation (TES)



Before and After TES in normal cases

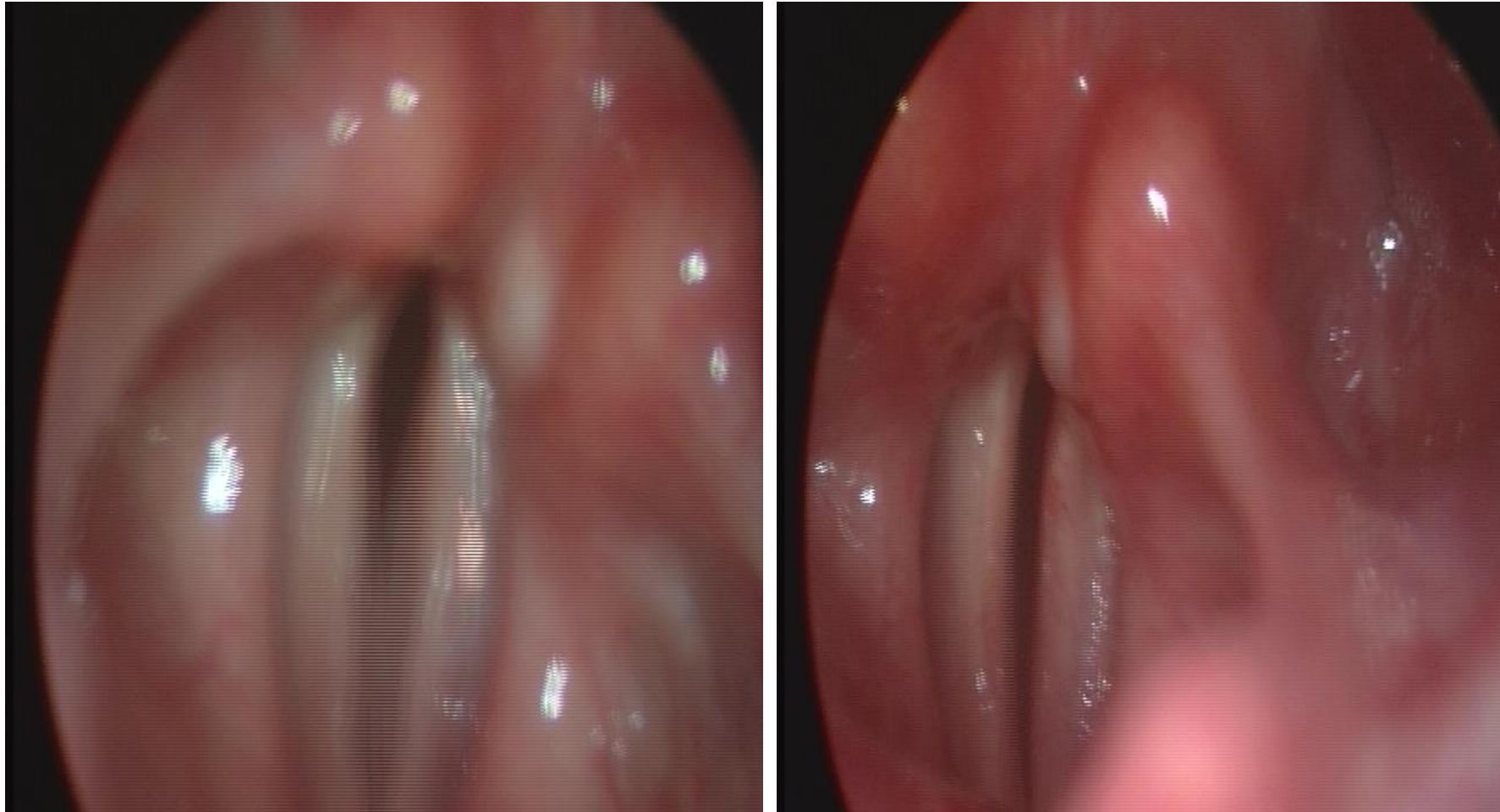


داده های جیتر هر بیمار قبل و بعد از درمان



Left TVC paralysis

L: after TES / R: before TES



Dysphagia

Swallowing Disorders

Deglutition Disorders

Signs and symptoms of dysphagia

- Recognizing food
- Placing food
- Control food or saliva
- Coughing
- pneumonia
- Weight loss
- Gurgly voice
- Increasing secretions (pharynx or chest)

Dysphagia in Elder population

- 70% to 90% of elderly population → some degree of swallowing dysfunction
- 50% of elderly have dysphagia leads to :
 - weight loss
 - increased risk of falling
 - poor healing
 - other illnesses associated with weakness

Related dysphagia disorders in elders

- Stroke
- Parkinson's disease
- Alzheimer's disease
- ALS
-

CVA

- 51% to 73% CVAs → dysphagia
- 50% of them **silent aspiration**
- 1/3 death after 1st month → aspiration pneumonia

Evaluation of Dysphagia

1. Bedside (clinical) examination
2. Videofluoroscopy
3. Fiberoptic Endoscopic Evaluation of Swallowing (FEES)





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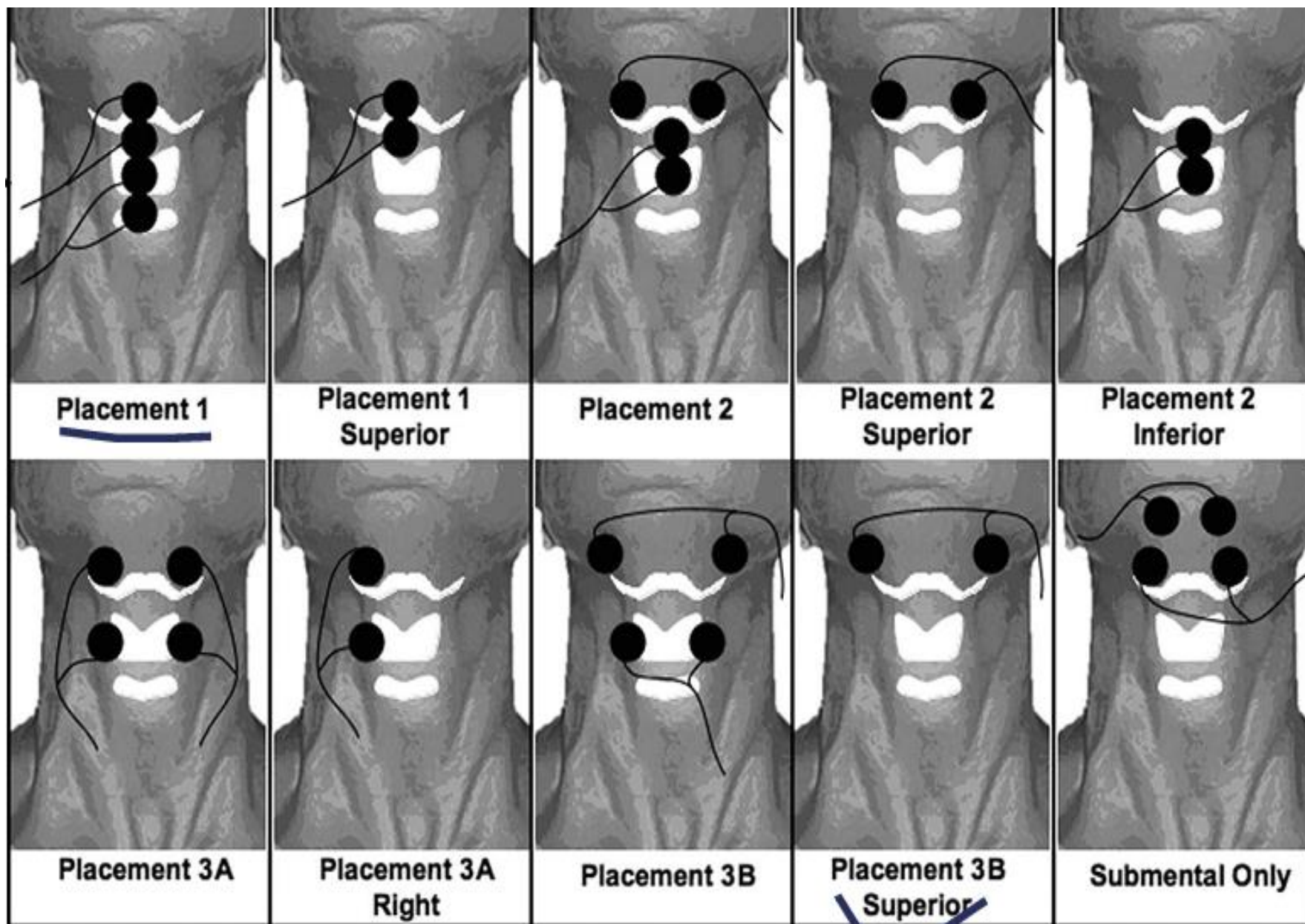
Swallowing Therapy

- **A) Compensatory treatment procedures**
 - Postural techniques
 - Oral sensory techniques
 - Modifying volume and speed of food presentation
 - Food consistency (diet) changes
 - Intraoral prosthesis
- **B) Therapy procedures**
 - Oral control and oral-pharyngeal range-of-motion exercises
 - Heightening sensory input
 - Swallow Maneuvers
- **Masako exercise**
- **Shaker exercise**
- **Therapeutic Biofeedback: (EMG, FEES,...)**

Vital-Stim Therapy



Figure 1



adductio

Thanks for your attention