



# BIOMECHANICAL FULL REPORT



## ADULT MALE

USER ID:	00021
Reg Number:	VCS_624
Sex:	M
Age:	50
Recording date:	22/01/2019
Time:	15:49:18

The results **WILL NOT BE VALID** if one of the following assumptions is met:

- You did not use an external microphone compatible with your device.
- You did not record the phonation of the vowel / a / maintained at normal tone and volume.
- The sample was contaminated with noise from the environment, voices from other people, etc.

## NOTES AND BIOMECHANICAL ASSESSMENT

ASSESSMENT OF PATHOLOGY PROFILE

Voice with alteration profile which would correlate with alteration characterised by mass effect with strong impact on glottal closure and asymmetry. Correlating with differing involvement of the free edge for both vocal cords.

- Biomechanics characterised by probable mass effect or behaviour encouraging damage to the free edge of the vocal cords and with a moderate impact on the vocal cord biomechanics.
- Biomechanics would reveal a moderate gap during the vibrating cycle of the vocal cords.
- Moderate asymmetry, compatible with moderately imbalanced dynamic of the free edge.

ASSESSMENT OF ALTERATION INDEX

Biomechanics of vocal cords with correlations compatible with:

- Separation of the free edge has increased duration.
- The vibration cycle of the vocal cords is characterised by an increased opening phase. Values outside of normal range.
- Correlation compatible with possible inefficiency in the glottal closure.
- The glottal dynamic does not provide adequate effort to create an effective sound for communication. The voice shows signs of fatigue and weakness. Effective tension cannot be sustained for a long time. The values indicate primary hypofunctional alteration (hypofunction in other words) or appears as a reaction to fatigue caused by hyperfunctional behaviour (reactive hypofunction).
- Biomechanics compatible with asymmetry in the dynamics of the free edge of the vocal cord.
- Increased correlation of mucosal wave in opening phase, although within normal limits.

ASSESSMENT OF DYNAMIC PROFILE

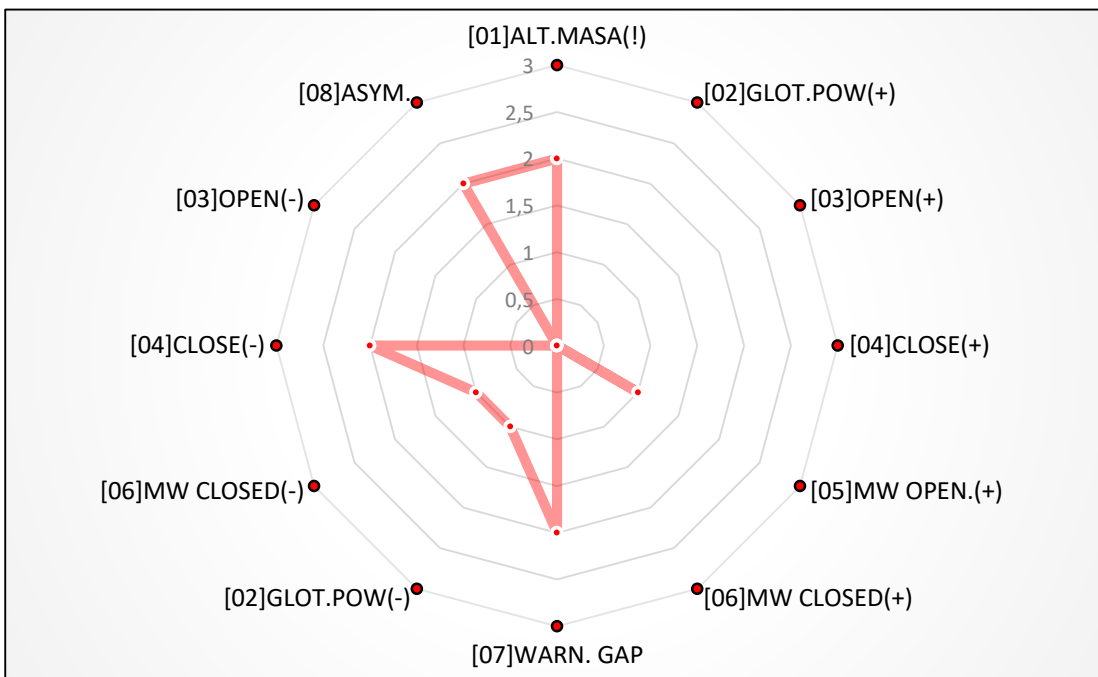
Compatible with vocal cords without approach dynamic and gap.



ADULT MALE

BIOMECHANICAL REPORT OF THE VOCAL FOLDS  
**R3 - UNBALANCE PROFILE**

USER ID: 00021  
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 Sex: M  
 Age: 50  
 Recording date: 22/01/2019



(!) The structural alteration with low impact during glottic closure may not appear in this graph, but it will be reflected in P19 (See results on sheet 4)

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**NOTE**

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- GLOT. POW. (+)** It correlates with phonation modes marked by excessive tension of the muscles involved in achieving and maintaining the glottal closure, regardless of the degree of achievement.
- GLOT. POW. (-)** It correlates with phonation modes marked by lack of tension of the muscles involved in achieving and maintaining the glottal closure, regardless of the degree of achievement.
- ALT. MASS.** It correlates with the presence of a structural alteration with mass effect (by increase or decrease) that causes an alteration in the glottic closure and in the vibration mode.
- MW (+).** It correlates with increased mucosal wave in phonation.
- MW (-).** It correlates with decreased mucosal wave in phonation.
- OPEN (+).** It correlates with increased open time, regardless of the degree of achievement of glottal closure.
- OPEN (-).** It correlates with decreased open time, regardless of the degree of achievement of glottal closure.
- CLOSE (+).** It correlates with increased close time, regardless of the degree of achievement of glottal closure.
- CLOSE (-).** It correlates with decreased close time, regardless of the degree of achievement of glottal closure.
- WARNING GAP** It is pointing to a significant gap and could be correlated with alterations in the medial movement of the vocal folds. It is recommended a deeper study of the patient.

ADULT MALE



BIOMECHANICAL REPORT OF THE VOCAL FOLDS  
**R3 - ALTERATION INDEX**

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	Value	Norm.*	Exten.*	
<b>• SET A</b> (Fundamental Frequency)				
P01 FO (Hz.)	112,2	105 - 139	95 - 159	
<b>• SET B</b> (Harmony in the movement of the edge)				
P02 Rat. Cycles Closing (Vfa/VFb)	0,50	1	0,50-0,33	
P03 % Asymmetry	82,0	0	0	↗
<b>• SET C</b> (Phases of the cycle)				
P04 Closed (%)	12,2	50 - 73	28 - 77	↓
P05 Open (%)	87,8	26 - 49	22 - 71	↑
P06 Opening (%)	52,1	12 - 27	8 - 35	↑
P07 Closing (%)	35,8	5 - 36	4 - 37	
<b>• SET D</b> (Muscular tension and stress)				
P08 Strain Ind. (r.u)	2,8	1,49 - 13	0,69 - 45	
P09 Closing Func. Power (r.u)	33,7	95 - 799	43 - 2100	↓
<b>• SET E</b> (Sufficiency of the closure)				
P10 Efficiency Ind. (r.u)	0,0	1,2 - 1,6	1 - 2,7	↓
P11 Gap Amplitude (r.u)	-0,056980	0	(-0,013)	↑
P12 Gap size (r.u)	100,0	0	1 - 35	↑
<b>• SET F</b> (Tension with instability)				
P13 Tremor (r.u)	18,5	0 - 17	< 30	↗
<b>• SET G</b> (Separation between edges)				
P14 Amplitude Ind. (r.u)	0,6	0,25 - 1,5	0,1 - 2,2	
<b>• SET H</b> (Mucosal wave and edema correlates)				
P15 MW Ind. Closing (r.u)	0,0	170 - 520	90 - 630	↓
P16 MW Ind. Opening (r.u)	175,6	15 - 89	7 - 155	↑
P17 Adequacy ratio MW closing (r.u)	-100,0	(-18) - 54	(-56) - 90	↓
P18 Adequacy ratio MW opening (r.u)	100,0	0	200	↗
<b>• SET I</b> (Mass correlates)				
P19 Structural imbalance ind. <sup>1</sup> (r.u)	0,0	<75	75 - 85	
P20 Mass Alt. ind. <sup>2,3</sup> (r.u)	2,8	0	0	↑

\* Estimated from the values of VCS Version 2019.\* \*Values are given in Percentage (%), Hertz (Hz.) or Relative Units (r.u)

[HELP](#)

	Normality Threshold		Consolidated Disorder Threshold
↗	Moderately increased	↑	Increased
↘	Moderately diminished	↓	Diminished



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**PARAMETERS**

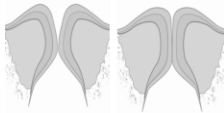
- 1 Fundamental Frequency
- 2 It is defined as the relation of cycles exist in the phase of closing between the free edges.
- 3 Asymmetry with increase of the open phase in the dynamics of the free edge during the vibration cycle.
- 4 % of time in which the edges of the vocal folds are approximating to achieve the closure.
- 5 % of time from a full cycle, in which the edges of the vocal folds are separated after a maximum closure
- 6 % of the opening (Separation)
- 7 % of the closing (Approximation)
- 8 Strain Index of the closure
- 9 Power of vocal folds to maintain a tension over time.
- 10 Optimal use of energy during voice production
- 11 Lack of a complete closure
- 12 Lack of a complete closure in relation to the closure phase
- 13 Instability to support a mucosal stable tension during vibration (Like vibrato)
- 14 Separation of the edges of the vocal folds
- 15 Mucosal wave observed during closing phase
- 16 Mucosal wave observed during opening phase
- 17 An edema correlation observed during the closing phase (Increased or decreased)
- 18 Adequacy ratio MW Opening: An edema correlation observed during the opening phase (Increased or decreased)
- 19 It correlates with (a) minimal structural alteration, (b) structural alteration but with small glottal impact, (b) biomechanical behavior that favors pathology or that causes a structural alteration of the vibratil zone.
  - (1): IG (-) Refers to a non-significant or compensated Glottal Impact
  - (2): IG (+) Refers to a significant and uncompensated Glottal Impact
  - (3): In order for the structural alteration to be detected, there must be an active participation in the generation of sound.
- 20 It correlates with a possible structural alteration in the mass of the free edge or in the supraglottic structures, in the case of the latter with an undesirable participation of the same during the vibration (Examples: Nodule, Sulcus, Cysts, Ventricular Bands, etc). Causing a mass effect, by increase or decrease.

ADULT MALE



BIOMECHANICAL REPORT OF THE VOCAL FOLDS  
**R3 - PROFILE DYNAMICS STUDY**

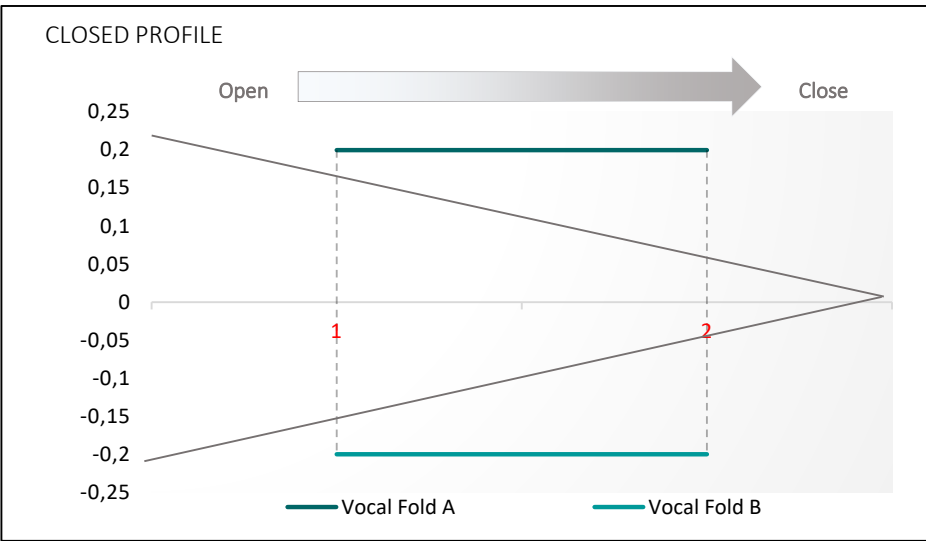
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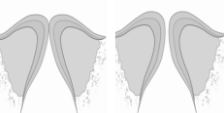
Observed Intermediate Closures (OIC)	
1	↓

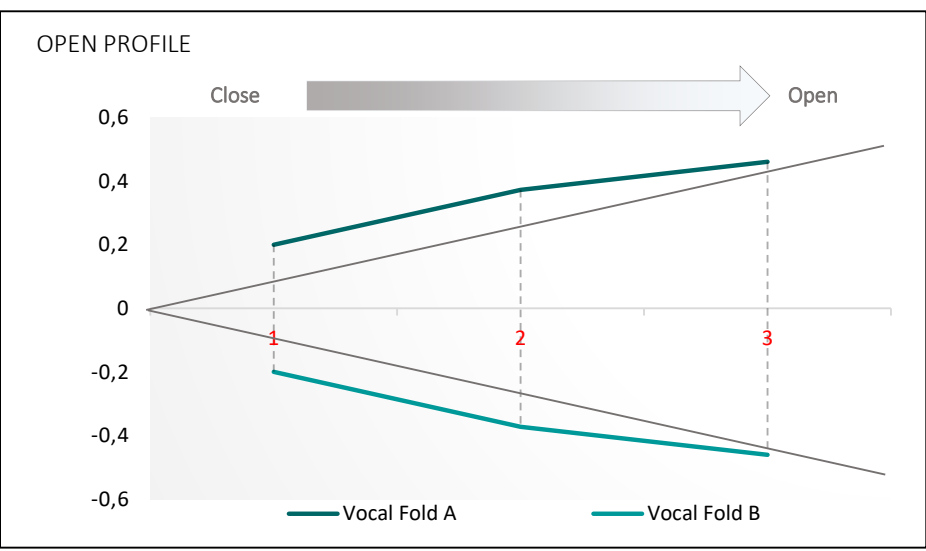
GAP Amplitude Index (GAI)	
-0,056980	



— Normal dynamic closing pattern  
 - - - Intermediate openings detected (C1,C2,...CF)  
 VFAc: Free edge of the vocal fold "A" during the closed phase  
 VFBC: Free edge of the vocal fold "B" during the closure phase



Observed Intermediate Openings (OIO)	
2	✓

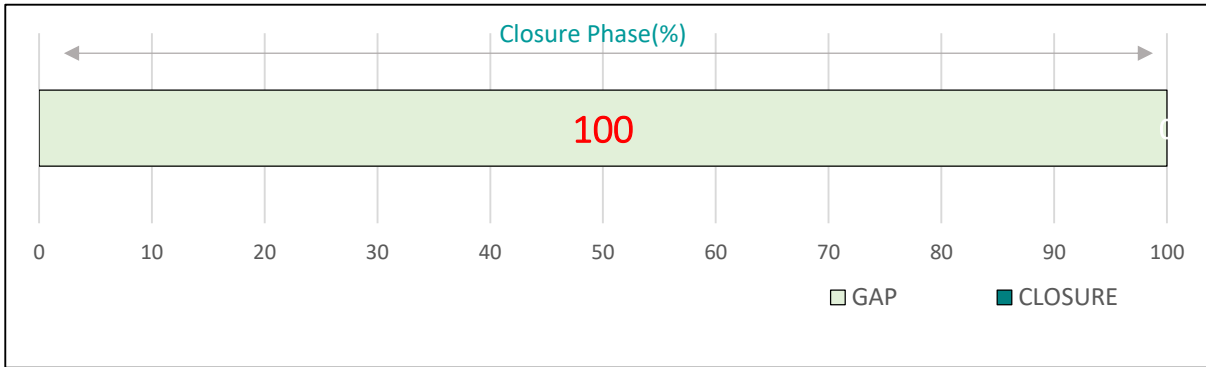


— Normal dynamic opening pattern  
 - - - Intermediate openings detected (I, O1,O2,...FO)  
 VFAo: Free edge of the vocal fold "A" during the open phase  
 VFBo: Free edge of the vocal fold "B" during the open phase

ADULT MALE



1. ALTERATION GAP:



2. REFERENCE POINTS:

Present / Away

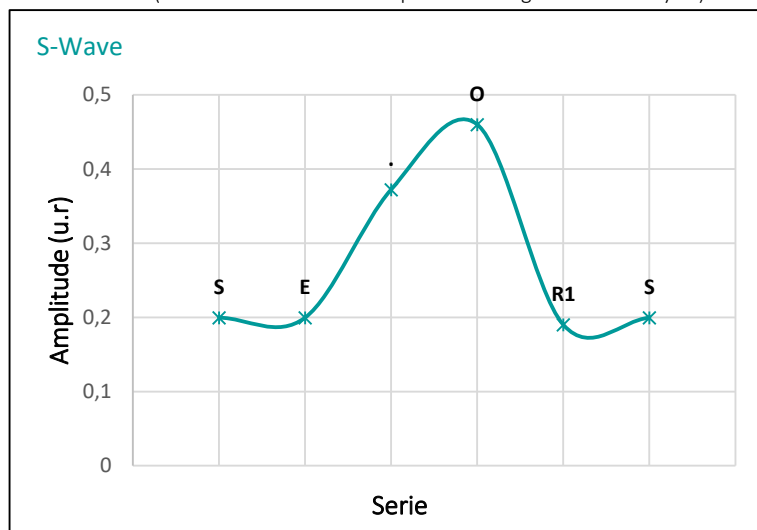
S	YES
C	YES
E	YES
Q	NO
O	YES
R1	YES

All present in normal biomechanics and are absent in an altered biomechanics

Presents with altered biomechanics, being indicative of possible injury. Absent in normal biomechanics

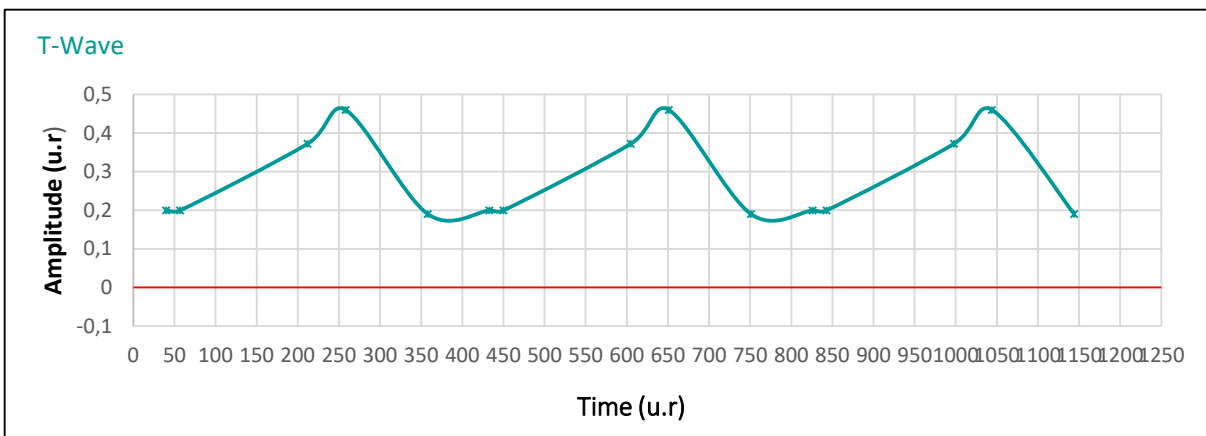
3. S-WAVE

(Serial identification of the points and segments of the cycle)



4. T-WAVE:

(Segments and points depending on the period)





HELP FOR THE INTERPRETATION OF GRAPHICS AND WAVES

1. GAP Alteration

The graph that represents the percentage of GAP in relation to the total of the closed phase of the cycle.

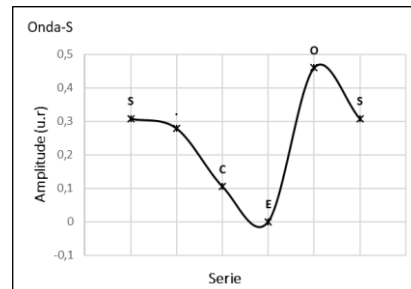
2. Reference Points

It allows to identify the different segments that determine the phases of the cycle and make it possible to characterize their alteration.

- S Starting point of the closed phase
- C Intermediate point in amplitude in closed phase
- E End closed phase and start of the open phase
- Q It appears in biomechanical alteration. Indicates an unwanted closure during the open phase.
- O End point of the opening phase and start of the closing phase.
- R The points R (R1, R2, ...) can be more than one and represent unwanted open during the closing phase. They are associated with biomechanical alteration and / or injury.

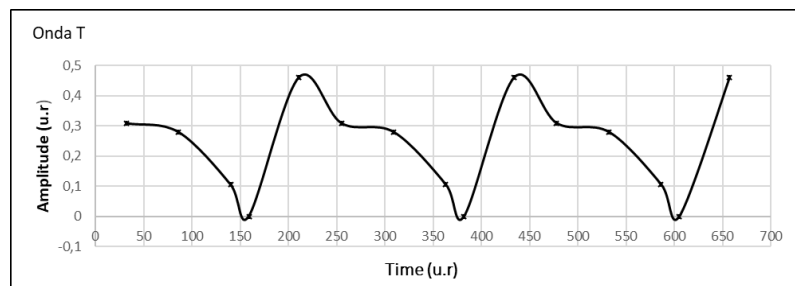
3. S-WAVE

Represents the sequential disposition of the reference points omitting the time value in period. It allows to identify all the present points, even if they present temporary overlap.



Biomechanical wave considering the period value of each reference point. Several consecutive cycles are shown. Some reference points can be superimposed by having an equal or very close period.

4. T-WAVE





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**Thank you for trusting Voice Clinical Systems!**

Should you need any further information, please contact us at the following e-mail address:

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