

## Original articles

# Level of physiological, anatomical and pathological knowledge of the singing voice on the part of professional and amateur singers

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## ABSTRACT

**Purpose:** the knowledge concerning care of the voice on the part of professional and amateur singers in Chile is relevant for voice professionals and also for speech pathologists who work in disorder prevention and voice care. It is important to know if there are differences between both groups regarding the knowledge of voice care.

**Methods:** the “*Vocal Awareness Questionnaire for Singers*” was applied to a sample of 66 singers: 33 professional and 33 amateur singers. Three areas of knowledge were evaluated: anatomy and physiology of the larynx, vocal hygiene and voice pathologies.

**Results:** there were no significant differences in the knowledge of voice care between professional and amateur singers both at a general level and in specific areas of knowledge. The topic of vocal hygiene obtained the highest percentage of correct answers in both groups, while the lowest percentage was in the area of voice pathologies.

**Conclusions:** there were no differences in the level of knowledge on voice care between the professional and amateur singers included in this study. In both groups, the level of knowledge was from low to moderate. This could increase the incidence of vocal pathologies in both groups.

**Keywords:** Voice; Singing; Voice Quality; Voice Disorders

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## INTRODUCTION

The correct use of the phonation mechanism is important, on the long term, for artists who use their voice as the chosen instrument of their musical career<sup>1</sup>. For this reason, all professional or amateur singers should be familiar with the basic processes involved in voice production. According to Alessandroni et al.<sup>2</sup>, singers lacking a detailed knowledge of the structure of the vocal folds and their principal characteristics, or of the nervous, sensory and motor processes involved in the phonation process, are unable to detect certain problems in their own voice or that of others. A singer<sup>3</sup> or singing teacher<sup>4</sup> possessing a good understanding of the physiology of the vocal cords can more easily visualize their operation and be aware of the basic physiological processes involved. Unfortunately, voice difficulties are common among both voice teachers and singers, even more so than among the general population<sup>5</sup>.

For singers, this knowledge is relevant, because not all voices possessing good esthetic characteristics are healthy voices. Singers lacking adequate knowledge of good vocal techniques are at greater risk of losing their vocal efficiency in the long term<sup>3</sup>. As a result, both singing teachers and singers may be affected by dysphonia, not to mention the fact that certain organic pathologies are caused by untreated *muscle tension dysphonia*<sup>3</sup>.

Not all singers are equally knowledgeable about vocal hygiene and care, or about specific aspects such as laryngeal physiology, vocal techniques, or the pathologies that may affect the voice of singers<sup>6</sup>. According to Behlau<sup>7</sup>, professional singers are more knowledgeable about the physiology of the vocal apparatus and the processes involved in voice production, as well as good habits of vocal hygiene, as a result of their formal professional education, including their vocal techniques. On the contrary, popular singers are flexible individuals, whose training is often informal or intuitive, they rehearse without performing vocal warm up exercises or applied techniques and have a lower level of knowledge, as they lack formal training<sup>8</sup>.

Limited experience on the part of the singer also seems to be a factor conducive to ignorance of basic care of the voice. Coelho<sup>9</sup> and Rosa et al.<sup>10</sup> say that one of the characteristics commonly found among amateur choir members is their lack of knowledge and their limited experience in comparison with professionals. These problems may be related to the lack of familiarity,

on the part of amateur singers, with specific singing techniques<sup>10,11</sup>.

Rosa et al.<sup>10</sup> conclude that, at present, the only source of knowledge available to amateur choir members, are the rehearsals provided by their teachers. Techniques such as breathing exercises, muscular relaxation, vocalizations, and scales for tonal extension are still commonly used by choir teachers. However, singers have very limited knowledge of processes taking place at the physiological level and of the effects of the above exercises on voice production<sup>12</sup>.

According to Estabillo<sup>13</sup>, vocal abuse and misuse may take place repeatedly as a result of habits that are harmful for singers' health, and of which they are occasionally aware<sup>14</sup>, such as excessive screaming, forced vocalizations, speaking in excess, performing hard glottal attack, inhalation of dust and harmful gases, or bad vocal and practice techniques that create hyperfunction of the vocal folds. As a result of vocal misuse and abuse, many singers suffer from chronic laryngitis, vocal nodules, vocal polyps, contact ulcers and/or laryngeal keratosis<sup>13</sup>.

Singers' good vocal habits and hygiene are also relevant for preventing pathologies. According to Dassie et al.<sup>11</sup>, both lyrical and pop singers have bad habits for vocal health, such as smoking and drinking, although there are differences between lyrical and pop singers, as lyrical singers possess greater knowledge of vocal performance and the role of voice therapists.

Knowledge of the physiology of the larynx, of care of the voice and of vocal misuse and abuse are important for the care of the singer's voice. However, these are aspects that have not been addressed in Chile till now. The objective of this study was to evaluate the level of knowledge about care of the voice in a sample of Chilean professional and amateur singers by applying the questionnaire *Vocal Awareness Questionnaire for Singers*.

## METHODS

This research was approved by the Ethics Committee of Universidad Católica de Temuco.

This study is based on the positivist paradigm. It is a non-experimental, descriptive and cross-sectional study<sup>15</sup>.

The variables considered were the following: gender, age, the items used in the questionnaire "*Vocal awareness questionnaire for Singers*" (Annex 1), and the categories of professional / amateur singer.

## Sample

The study considered a sample of 66 singers: 33 professional singers and 33 amateur singers in the cities of Temuco and Santiago of Chile. The sample was selected by convenience sampling. As group distribution criterion, we followed the one suggested by Grape et al.<sup>16</sup>: A Professional Singer [PS] is a singer who has followed formal professional education, including vocal techniques, with regular classes and rehearsals, and who receives remuneration for their singing. An Amateur Singers [AS] is a singer who takes singing lessons for non-professional reasons, during their spare time, and receives no remuneration for singing.

We excluded those singers that have followed studies and/or specialties in vocology, for example: phono-audiologists or ear, nose, and throat specialists.

## Instrument

*Vocal Awareness Questionnaire for Singers*: we adapted to the Spanish language Colleen Braun-Janzen & L. Zeine's questionnaire<sup>6</sup>. The original instrument has 6 items, only three of which were used in this study: anatomical-physiological knowledge (*PART VI*;

*questions 39 to 45, PART VII 56*), vocal hygiene (*PART V; questions 29 to 38*) and pathologies of the singing voice (*PART VI; questions 46 to 55, PART VII, 57 to 59*). The other 3 items were not used as they are not pertinent to this research.

## Procedure

Singers were recruited either in person or through email. After the study objectives had been explained, including the risks and benefits of the study, each singer signed an informed consent form. Next, each participant completed the questionnaire *Vocal Awareness questionnaire for singers* in one of the following manners: in person or online (Google Forms). Each participant was given 15 minutes to complete the questionnaire.

The Chi-squared was used to determine the differences between groups. The variables were subjected to descriptive and inferential analysis, considering a statistical significance value of  $< 0.05$ .

## RESULTS

The analysis of the data is presented in Tables 1 and 2.

**Table 1.** Baseline data on professional and amateur singers

		Type of singer	
		PS	AS
Gender	Females	19 (57.6%)	19 (57.6%)
	Males	14 (42.4%)	14 (42.4%)
Type of music education	None	5 (15.2%)	17 (51.5%)
	Some, but no degree was completed	7 (21.2%)	14 (42.4%)
	Undergraduate music degree	11 (33.3%)	2 (6.1%)
	Masters	5 (15.2%)	0 (0.0%)
	Doctorate	1 (3.0%)	0 (0.0%)
	Vocal technique	1 (3.0%)	0 (0.0%)
	Degree in lyrical singing	1 (3.0%)	0 (0.0%)
	Music composition	1 (3.0%)	0 (0.0%)
	Singing performer	1 (3.0%)	0 (0.0%)
(Vocal) diagnosis	No pathologies	27 (81.8%)	30 (90.9%)
	Vocal nodules	4 (12.1%)	1 (3.0%)
	Contact ulcers	0 (0.0%)	0 (0.0%)
	Gastroesophageal reflux	1 (3.0%)	0 (0.0%)
	Reinke's edema	0 (0.0%)	0 (0.0%)
	Vocal fold paralysis	1 (3.0%)	0 (0.0%)
	Functional dysphonia	0 (0.0%)	2 (6.1%)
Have you ever being given speech therapy services?	None	19 (57.6%)	29 (87.9%)
	Voice therapy	8 (24.2%)	2 (6.1%)
	Articulation	1 (3.0%)	1 (3.0%)
	Other	4 (12.1%)	0 (0.0%)
	No treatment received	0 (0.0%)	0 (0.0%)
	Control	1 (3.0%)	1 (3.0%)

PS =Professional singers;AS =Amateur singers

**Table 2.** Baseline data on professional and amateur singers

	Type of singer	
	PS	AS
	Average ± S.D.	Average ± S.D.
Age of the singer	37.09 ± 14.83	29.96 ± 14.31
Years of individual singing training	7.6 ± 10.14	1.72 ± 2.0
Years as a choir director	5.12 ± 7.51	2.6 ± 5.55
Years as a singing teacher	5.15 ± 8.46	0.81 ± 2.17
Singing hours per week	10.45 ± 9.13	7.17 ± 6.18
Years singing in a choir	8.66 ± 8.45	11.95 ± 14.1

S.D.= Standard Deviation;PS =Professional singers;AS =Amateur singers

## General knowledge

In general terms, considering both groups, 33.8% of the singers evidenced limited knowledge (0-32% correct answers), 49.4% evidenced moderate knowledge

(33-65% correct answers) and 17.1% evidenced high level of knowledge (66-100% correct answers).

## Knowledge per item

**Table 3.** Level of knowledge on laryngeal anatomy and physiology, vocal hygiene and vocal pathology per group

Level of knowledge Variable	Group	Limited % (n)	Moderate % (n)	High % (n)	P value
Knowledge of anatomy and physiology	PS	24.20% (8)	72.80% (24)	3.00% (1)	0.18
	AS	39.4% (13)	51.60% (17)	9.10% (3)	
Knowledge of vocal hygiene	PS	0.00% (0)	45.40% (15)	54.60% (18)	0.23
	AS	3.00% (1)	60.60% (20)	36.40% (12)	
Knowledge of vocal pathologies	PS	60.60% (20)	39.40% (13)	0.00% (0)	0.19
	AS	75.80% (25)	24.20% (8)	0.00% (0)	

PS = Professional singers; AS = Amateur singers; \*Statistical significance for Chi-square test

There were no differences between groups in terms of the items related to anatomical-physiological knowledge ( $p=0.18$ ), vocal hygiene ( $p=0.23$ ) and knowledge of vocal pathology ( $p=0.19$ ) (Table 3).

The questions that received the greatest percentage of correct answers included the following: function of the diaphragm (71.2%), the relaxation function of yawning (77.3%), the knowledge of treatment for laryngitis (96.9%), the damage caused by throat-clearing (93.9%), the damage caused by speaking in noisy environments (89.3%) and the progression of vocal nodules (56.1%).

The questions with the highest percentage of incorrect answers or lack of knowledge are related to the glottis (75.8%), the function of the cricothyroid muscle (90.9%), the use of the stomach for breathing (59.1%), the function of the soft palate (75.8%), the effects of antihistamines on the voice (50%), the harmful effects of whispering (63.6%) and the effects of speaking in a low tone (77.3%). The item receiving the highest percentages of incorrect answers or lack of knowledge was the one related to vocal pathologies. The singers had no knowledge of the physiopathology of vocal nodules, its etiology per gender (87.9%), its bilateral presentation (71.2%), the structural characteristics of the nodules (51.5%), their progression and evolution (84.9%), the symptoms associated with vocal nodules (42.4%) and their treatment (39.4%). Similarly, singers gave high percentages of incorrect answers in relation to

the effects of reflux (63.7%), contact ulcers (83.3%) and polyps (72.8%).

## DISCUSSION

Professional singers are those who have had formal education or training, and have been subjected over several years to the discipline that is characteristic of their profession and their vocal techniques, including regular classes and rehearsals. Behlau<sup>7</sup> states that this group has deeper knowledge of the physiology of the vocal apparatus, of different aspects of voice production, and of habits of vocal hygiene. On the contrary, pop singers are flexible individuals, whose training is intuitive or informal, and they rehearse without vocal warm-up exercises or applied techniques<sup>7</sup>. However, our results are similar to those of Kwak et al.<sup>16</sup>, which indicate that singers with more advanced studies do not possess significantly greater knowledge of the anatomy of the voice and its physiology. In spite of their relatively low level of knowledge, professional singers recognized that possessing knowledge of the anatomy and physiology of the singing voice is a pre-requisite for achieving good performance in lyrical singing. This is in agreement with Sielska et al.<sup>17</sup>, who concluded that, for singers, this knowledge is essential for improving their singing performance.

Both groups gave a high percentage of correct answers in *vocal hygiene*. In this regard, the type of health care sought by singers may determine their interest in the quality of the voice. A study conducted



by Petty<sup>18</sup> on professional singers seeking information on vocal health, concludes that singers are more likely to seek information from singing teachers about vocal problems, compared to persons who are not singers, as the latter are more likely to seek advice from doctors or voice therapists. The study also indicates that younger singers are more likely to use home remedies in comparison with older singers<sup>18</sup>. Behlau<sup>7</sup> states that amateur and pop singers are more likely to see a speech therapist for general guidance and for vocal hygiene, due to their high rates of vocal misuse and abuse. In the present study, amateur singers were less likely to visit a speech therapist, with dysphonia being the most frequent motive for the visit. Professional singers are more likely to visit a phono-audiologist, with the main motive being voice therapy. According to a study of music students conducted by Kwak et al.<sup>16</sup>, the more-experienced singers do not possess significantly greater knowledge of the anatomy of the voice and its physiology, but they are more interested in visiting an ear, nose, and throat specialist, and in learning about vocal pathologies.

Pazo et al.<sup>19</sup> say that, of all singers, lyrical singers are the most likely to avoid vocal abuse and misuse, and their vocal technique is more effective in comparison with pop singers, who neglect good vocal technique. Similarly, Achey et al.<sup>20</sup> state that vocal warm-up exercises are more frequently practiced by opera singers than by pop singers. However, in the present research no marked differences were found in terms of knowledge of vocal techniques, as both groups reported moderate to high levels of care of the voice.

The most common pathologies in singers are laryngitis, vocal nodules and edema. Singers are more likely to perceive voice symptoms, due to years of self-observation and the importance accorded to these symptoms by singers. According to García-López et al.<sup>21</sup> singers are more likely to suffer pathologies of the singing voice. The research carried out by Braun-Jansen<sup>6</sup> indicates that most singers obtain low scores in knowledge about pathologies. This is confirmed in the present study. Similarly, in the item relative to pathologies of the singing voice there is no significant difference between PS and AS in terms of knowledge of vocal pathology.

It is interesting to note that 82.8% of the singers in this study evidenced *limited or moderate knowledge*. Therefore, it can be stated that a high percentage of singers requires improvement and education in these areas of knowledge, as indicated by

Broaddus-Lawrence et al.<sup>22</sup> These researchers state that the singers in their study reported obtaining a high degree of benefits and learnings after taking classes and practice sessions in vocal hygiene.

We may mention the following limitations of the present study: the relatively small sample size and the limited control over the online filling of the questionnaire. Therefore, these results should be taken with caution, and not generalized. It is relevant to mention that one third (33.85%) of the respondents said they do not know what the role of the phono-audiologist is in relation to singing. Although these data were not analyzed quantitatively, we consider it advisable to conduct further research in this field within the Chilean context.

## CONCLUSION

Both professional and amateur singers possess limited to moderate general knowledge in terms of anatomy, physiology and pathology of the singing voice. There were no differences detected between these two groups.

The results of this research indicate that the singers in this study do not possess adequate knowledge about the care of the voice. This is the case even for singers who consider themselves professionals. It seems important that singers be educated in the prevention of vocal pathologies.

It seems advisable for new research to be conducted along these lines, based on different classification and exclusion criteria for professional singers, so as to make it possible to analyze the differences between singers who have followed formal university-level studies and those who have received informal training.

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**Annex 1. QUESTIONNAIRE – SINGERS' VOCAL AWARENESS**

Colleen Braun-Janzen, M.Mus.

**INSTRUCTIONS:** Please answer all questions. Unless otherwise indicated, provide one answer per question.**PART I**

1. Age: \_\_\_\_\_
2. Gender: M \_\_\_\_\_ F \_\_\_\_\_
3. Type of voice: Soprano \_\_ Contralto \_\_ Tenor \_\_ Baritone \_\_
4. Occupation: \_\_\_\_\_
5. Education: Highest level attained (High School degree, University degree, etc.) \_\_\_\_\_
6. What education have you received? (Indicate highest level attained)
  1. \_\_\_\_\_ None
  2. \_\_\_\_\_ Some, but no degree was completed.
  3. \_\_\_\_\_ Undergraduate music degree
  4. \_\_\_\_\_ Masters
  5. \_\_\_\_\_ Doctorate
7. How many years of individual singing training?  
\_\_\_\_\_ N/A \_\_\_\_\_
8. How many years as choir director?  
\_\_\_\_\_ N/A \_\_\_\_\_
9. How many years as a singing teacher?  
\_\_\_\_\_ N/A \_\_\_\_\_
10. On average, how many hours do you sing, per week? \_\_\_\_\_
11. How many years singing in a choir? \_\_\_\_\_
12. Have you worked as a professional singer (for remuneration)?
  1. \_\_\_\_\_ Yes 2. \_\_\_\_\_ No
13. Have you ever been diagnosed with a vocal disorder?
  1. \_\_\_\_\_ Yes 2. \_\_\_\_\_ No

If yes, what was the diagnosis? (tick all that apply)

  1. Vocal nodules \_\_\_\_\_
  2. Contact ulcers \_\_\_\_\_
  3. Other. \_\_\_\_\_

Please provide more information: \_\_\_\_\_
14. a. Have you ever received the services of a voice and speech professional (Speech Therapist)?
  1. \_\_\_\_\_ Yes 2. \_\_\_\_\_ No

b. If yes, what was the motive? (Tick all that apply)

  1. \_\_\_\_\_ Voice therapy
  2. \_\_\_\_\_ Articulation
  3. \_\_\_\_\_ Other (please specify): \_\_\_\_\_
  4. \_\_\_\_\_ N/A
15. What type of professional has given you the most valuable advice on vocal care? (Tick one)
  1. \_\_\_\_\_ Singing teacher
  2. \_\_\_\_\_ Choir director
  3. \_\_\_\_\_ School or university courses
  4. \_\_\_\_\_ Speech Therapist
  5. \_\_\_\_\_ Other (please specify): \_\_\_\_\_



**PART II**

In your opinion, a speech-language pathologist should be qualified to:

16. Reduce stress in a person's neck area (larynx).

I don't know \_\_\_\_ Yes \_\_\_\_ No \_\_\_\_

17. Diagnose vocal folds lesions.

I don't know \_\_\_\_ Yes \_\_\_\_ No \_\_\_\_

18. Help a person raise or lower the tone frequency of their voice.

I don't know \_\_\_\_ Yes \_\_\_\_ No \_\_\_\_

19. Raise awareness of vocal care.

I don't know \_\_\_\_ Yes \_\_\_\_ No \_\_\_\_

**PART III**

Please indicate your level of knowledge of the following (tick one per area):

1. Limited or no knowledge 2. Basic understanding 3. Complete understanding

20. Anatomy and physiology (function) of voice production 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

21. Care of the vocal mechanism 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

22. Role of the speech therapist 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

23. Vocal disorders related to abuse of the voice 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

**PART IV**

Are you interested in deepening your knowledge of the following? (Tick).

1. Little or no interest 2. Moderate interest 3. Very interested

24. Anatomy and physiology (function) of the voice 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

25. Role of the speech therapist 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

26. Hygiene of vocal apparatus 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

27. Optimum use of the spoken voice 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

28. Vocal disorders 1. \_\_\_\_ 2. \_\_\_\_ 3. \_\_\_\_

**PART V.** (In Parts V, VI and VII, code words are included for the benefit of readers)

In your opinion, are the following activities, substances and environmental factors harmful for the voice?

Habits	Yes	No
29. Speaking when suffering from laryngitis		
30. Taking antihistamines (for example, Sudafed)		
31. Throat-clearing		
32. Prolonged production of /m/		
33. Air conditioning		
34. Drinking coffee		
35. Whispering		
36. Speaking in noisy environments		
37. Yawning		
38. Speaking in a low tone of voice		

**PART VI**

True or False (tick one per question)

1. I don't know    2. True            3. False

39. The principal muscle involved in inhalation is the diaphragm.

I don't know  T  F

40. Yawning lowers the throat (larynx) and relaxes the muscles around it (pharyngeal constrictors).

I don't know  T  F

41. The glottis is a cartilage in the larynx.

I don't know  T  F

42. The cricothyroid muscle opens the vocal cords.

I don't know  T  F

43. Falsetto singing requires stretching of the vocal cords.

I don't know  T  F

44. In diaphragmatic respiration, the stomach is filled with air during inhalation.

I don't know  T  F

45. The soft palate is raised when making nasal sounds during singing (n, m, and ng)

I don't know  T  F

46. Vocal nodules are more frequent in females.

I don't know  T  F

47. Vocal nodules are often present in only one vocal cord

I don't know  T  F

48. Vocal nodules are small fibrous lumps usually located in the center of the vocal cord.

I don't know  T  F

49. Vocal nodules, if untreated, may lead to laryngeal cancer.

I don't know  T  F

50. If you have chronic heartburn (Gastroesophageal reflux), you should sleep with your legs slightly raised

I don't know  T  F

51. Contact ulcers are associated with high intensity of the voice

I don't know  T  F

52. Vocal nodules generally appear gradually

I don't know  T  F

53. Polyps in the vocal cords may appear suddenly, after a single episode of vocal abuse.

I don't know  T  F

54. Contact ulcers are more frequent in males.

I don't know  T  F

55. Chronic heartburn (Gastroesophageal reflux) put you at risk of developing contact ulcers in the vocal cords.

I don't know  T  F

**PART VII. Multiple selection**

56. Physiological measurements indicate that a "Support" for singing (with optimum projection and resonance) is closely associated with:

1.  I don't know

2.  expansion of the rib cage

3.  reduction of the larynx and stronger closing of the vocal cords.

4.  reduction of the membrane during inhalation, and compression of the abdomen during exhaling.

57. What are the symptoms reported by singers with small / incipient nodules?

1.  I don't know

2.  Pain, hoarseness, limited tonal range

3.  Hoarseness, difficulty in singing register transitions (vocal passages), and difficulties in fortissimo singing

4. \_\_\_\_ Difficulties with low intensity singing (piano), slight noises when breathing /noises when starting and difficulties during vocal passages.

5. \_\_\_\_ Pain, difficulties with low-intensity singing (piano), and hoarseness.

58. The best treatment for the first stages of vocal nodules is:

1. \_\_\_\_ I don't know
2. \_\_\_\_ Surgical removal
3. \_\_\_\_ Total resting of the voice until symptoms disappear
4. \_\_\_\_ Voice therapy focused on change vocal habits
5. \_\_\_\_ Whispering till vocal folds return to normal

59. The best treatment for the first stages of laryngitis is:

1. \_\_\_\_ I don't know.
2. \_\_\_\_ Cortisone
3. \_\_\_\_ Total resting of the voice until symptoms disappear
4. \_\_\_\_ Voice therapy focused on change vocal habits
5. \_\_\_\_ Whispering till vocal folds return to normal

#### PART VIII

60. When you have phlegm / mucus in the throat, you should (tick all that apply).

- a. \_\_\_\_ Cough or clear the throat
- b. \_\_\_\_ Swallow
- c. \_\_\_\_ Drink water
- d. \_\_\_\_ Dry cough (no secretion, "choppy" coughing)

61. When you have a hoarse voice, you should (tick all that apply).

- a. \_\_\_\_ Increase the intake of liquids
- b. \_\_\_\_ Stop singing, or sing only for important occasions
- c. \_\_\_\_ Avoid alcohol
- d. \_\_\_\_ Use a vaporizer or humidifier at night
- e. \_\_\_\_ Sing as usual
- f. \_\_\_\_ Decrease the use of the voice for speaking
- g. \_\_\_\_ Cancel all social activities that involve speaking
- h. \_\_\_\_ Whisper when communicating
- i. \_\_\_\_ Sleep longer
- j. \_\_\_\_ Avoid caffeine
- k. \_\_\_\_ Avoid smoky environments
- l. \_\_\_\_ Avoid speaking in noisy environments
- m. \_\_\_\_ Take cortisone if you have to use your voice
- n. \_\_\_\_ Take antihistamines (for example, Loratadine or chlorphenamine)

#### PART IX

62. The following statements reflect a singer's attitude to singing. Please choose the one that most closely describes your feelings:

1. \_\_\_\_ singing is the most important thing in my life
2. \_\_\_\_ singing is one of the 3 most important things in my life.
3. \_\_\_\_ singing is one of the 5 most important things in my life.
4. \_\_\_\_ singing is one of the 10 most important things in my life.
5. \_\_\_\_ singing is not one of the 10 most important things in my life.