Vocal discomfort, signs and symptoms in soccer coaches and physical trainers

Desconfortos, sinais e sintomas vocais em técnicos e preparadores físicos de futebol

Malestares, signos y síntomas vocales en Técnicos y Preparadores físicos de Fútbol

Regina Zanella Penteado[*]
Nolle Bernardi da Silva[*]
Maria Luisa Meneguetti Calçada[*]
Maria Imaculada de Lima Montebello[*]

Abstract

Purpose*:* To compare the presence of self-reported vocal signs and symptoms and discomforts in the vocal tract of soccer coaches and physical trainers and to verify differences between the categories. Methods*:* The subjects are 13 Physical Trainers (PT) and 13 Coaches (C) of the A-series teams of the first phase of the Paulista Soccer Championship 2012. The following instruments were used: Vocal Signs and Symptoms Questionnaire (VSSQ) and Vocal Tract Discomfort Scale (VTDS); statistical tests compared the categories. Results*:* Mean occurrence of vocal Signs/Symptoms: C=2.17 and PT=2.38 and mean number of occurring discomforts C=3.33 and PT=3.61; frequency of discomforts C=6.66 and PF=7.69 and discomfort intensity T=7.00 and PT=9.15. In both categories, the most frequently reported signs/symptoms were hoarseness and tired voice; and the vocal tract discomfort with higher frequency and intensity was dryness. There was no significant ($p>0.05$) difference between the categories. Conclusions*:* The presence of discomfort and vocal signs and symptoms alerts towards the risk conditions for dysphonia in both categories. The issues of professional voice use, and vocal care and health merit the attention of soccer coaches and physical trainers, as well as of Education and Health professionals who work in with physical educators' and soccer professionals' education and accessory

Keywords: *Voice; Speech Language Pathology and Audiology; Soccer; Health Promotion; Physical Education and Training; Education.*

[*]*Universidade Metodista de Piracicaba (UNIMEP), Piracicaba, SP, Brasil.*
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Correspondence Address: Regina Zanella Penteado. Rio Claro, SP, Brasil.
E-mail: rzpenteado@unimep.br
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Resumo

Objetivo: Comparar a presença de sinais e sintomas vocais e de desconfortos no trato vocal, autorreferidos, por Técnicos e Preparadores Físicos de futebol. **Métodos:** São sujeitos da pesquisa 13 Preparadores Físicos (PF) e 13 Técnicos (T) de times da série A da primeira fase do Campeonato Paulista de Futebol 2012. Foram aplicados os instrumentos: Questionário de Sinais e Sintomas Vocais (QSSV) e Escala de Desconforto no Trato Vocal (EDTV); usaram-se também testes estatísticos para a comparação de categorias**. Resultados**: Média de Sinais/Sintomas vocais: T=2,17 e PF=2,38. Média de ocorrência de desconfortos: T=3,33 e PF=3,61; de frequência de desconfortos: T=6,66 e PF=7,69 e de intensidade de desconfortos: T=7,00 e PF=9,15. Para as duas categorias, os Sinais/Sintomas mais referidos foram rouquidão e voz cansada; e o Desconforto no trato vocal com maiores médias de frequência e de intensidade foi secura. Não houve diferença significativa (p>0,05) entre as categorias. **Conclusões:** A presença de desconfortos, sinais e sintomas vocais alerta para condições de risco para disfonia em ambas as categorias. As questões de uso profissional da voz e de cuidado e saúde vocal merecem a atenção dos Técnicos e Preparadores Físicos de futebol e também dos profissionais das áreas de Educação e Saúde que atuam na formação e na assessoria junto a educadores físicos e profissionais do futebol.

Palavras-chave: Voz; Fonoaudiologia; Futebol; Promoção da Saúde; Educação Física e Treinamento; Educação. .

Resumen

Objetivo: Comparar la presencia de señales e síntomas vocales e de malestar en el trato vocal, auto-referidos, por Técnicos y Preparadores Físicos de fútbol. **Métodos**: son sujetos 13 Preparadores Físicos (PF) y 13 Técnicos (T) de equipos de la serie A de la primera fase del Campeonato Paulista de Fútbol 2012. Se aplicaron los instrumentos: Cuestionario de Signos y Síntomas Vocales (QSSV) y Escala de Malestar en el Trato Vocal (EDTV); se empleó también pruebas estadísticas para comparar las categorías. Resultados***:*** Promedio de Señales/Síntomas vocales: T=2,17 e PF=2,38. Promedio de ocurrencia de malestar: T=3,33 e PF=3,61; de frecuencia de malestar: T=6,66 e PF=7,69 y de intensidad de malestar: T=7,00 e PF=9,15. En ambas categorías los Señales/Síntomas más mencionados fueron ronquera y voz cansada; y el malestar en el tracto vocal con mayores promedios de frecuencia y de intensidad fue sequedad. No hubo diferencia significativa (p>0,05) entre las categorías. Conclusiones***:*** La presencia de malestares, señales y síntomas vocales alerta para condiciones de riesgo para disfonía en ambas categorías. Las cuestiones del uso profesional de la voz y del cuidado y salud vocal merecen la atención de los Técnicos y Preparadores Físicos de fútbol y también de los profesionales en las áreas de Educación y Salud que trabajan en la capacitación y en el asesoramiento en conjunto con educadores físicos y profesionales del fútbol**.**

.***Palabras clave:*** *Voz; Fonoaudiología; Fútbol; Promoción de la Salud; Educación Física y Entrenamiento; Educación.*

Introduction

No Soccer is a part of Brazilian national culture. The educational purpose of soccer is the focus of discussions in schools, especially among physical education teachers and professional. The concern is in emphasizing the importance of this sport in education and respect to social values, and the debate includes subjects about citizenship, fair-play, and violence in sport, among others [1].

Since they have a high vocal demand, soccer coaches and physical trainers have their voices as a fundamental tool to attend to functions and needs regarding communication efficiency and vocal psychodynamics, in the relationship with the players [2]. Both categories need to be listened and work in open and noisy environments, requiring vocal quality, flexibility, resistance, and projection, usually with high medium to high intensity – and all this requires attention and vocal health care [2]. National and international literature references presents a small number of studies regarding the vocal health of soccer professionals, such as coaches 2-6, managers 7 and physical trainers 2.

The work context is important and should be considered in the studies about vocal health and occupational voice use. Work conditions impact the voice and are risk factors for dysphonia. They also have roles that are determinant and predisposing of the voice-related health-illness-care process. Therefore, regarding environmental risk factors for occupational dysphonia[8], these may be: a) physical (high levels of sound pressure level, sudden temperature changes, inadequate ventilation and lighting conditions); b) chemical (exposure to certain irritating elements of the upper airway such as solvents, metallic smoke, toxic gases, dust and cigarette smoke); c) ergonomic (posture, environment acoustics, problems related to furniture, equipment, work resources, availability and access to drinking water and restrooms; for instance).

Some authors consider that the risk for dysphonia in sports coaches is similar to that of other categories of voice professional, such as telemarketing professional, singers and teachers – especially Physical Education teachers, whose activities involve similar tasks and work environments to those of sports coaches [3].

Specific aspects of the work conditions and voice use situations of sports coaches may result in additional vocal demands and risks [3], such as: speaking to groups of people; using the voice continuously for long periods of time; vocal overload; exposure to environmental changes and adverse climate conditions such as wind and rain; communication demands in noisy environments with high level of reverberation; voice strain, increase in intensity and frequency and/or yelling in order to be heard by the players or other members of the technical team who are positioned at a distance [2-10].

Studies show that, in general, soccer coaches [2-7] as well as Physical Education professional do not receive guidance concerning vocal health, and they have inadequate vocal habits and are unaware of vocal care measures.

The lack of education, preparation and follow-up regarding vocal use and health, in addition to other factors regarding work conditions and organization may lead subjects to conditions involving vocal discomfort, complains, signs, symptoms and dysphonia involving laryngeal lesions such as nodules, edema, polyp and hemorrhage, among other problems [2-11]. It should be noted that the presence of vocal discomfort may precede the installation of conditions that are characteristic of vocal disorders. In addition, subjects with dysphonia usually have some vocal tract discomfort, possibly resulting from excessive strain in phonation, involving perilaryngeal muscles [12].

A study [3] with 12 Australian football (rugby) coaches showed that the subjects had vocal symptoms, more frequently vocal fatigue and hoarseness. They do not seek professional care over the problems they perceive. In order to ease the perceived vocal discomforts and improve vocal quality, the attempts are isolated and involve: drinking fluids and undergoing voice rest, without guidance or any sort of attention from a health professional (general practitioner, otolaryngologist or Speech-Language Pathologist and Audiologist) focusing on voice use and vocal health.

Another study [5], with four amateur soccer coaches showed that most of them report some vocal symptoms such as: vocal fatigue, hoarseness, tension and temporary voice loss. The subjects were submitted to a vocal education program that generated positive impacts on vocal quality.

Discomfort is the term employed to describe a subjective experience that represents a condition that harms the ideal function of a structure – such as the vocal tract. Thus, vocal discomfort may

signify burning sensation, tightness, dryness, painful throat, itching, sensitive throat, sore throat and lump sensation in the throat [12]. Discomfort in the vocal tract may, therefore, consist of valuable information in investigating the vocal health--illness-care process, especially of workers who use their voices in a professional context.

This study focuses on two categories linked to soccer (coaches and physical trainers) who have similarities as well as specificities regarding the environmental work conditions and professional voice use demands. Both may supposedly face similar risks for dysphonia and present vocal signs, discomforts and symptoms.

The present study aims to contribute to understanding the vocal health-illness-care process of the professional categories linked to soccer and obtain the attention of the professionals in the fields of Education, Physical Education, Sports, Sports Medicine, Speech Language Pathology and Audiology, Collective Health and Workers' Health to the issue of vocal health, subsidizing educational practices and health promotion actions directed towards the focused categories.

Thus, the purpose of this study is to compare the presence of self-reported vocal signs and symptoms as well as vocal tract discomforts in soccer coaches and physical educators.

Methods

The study was approved by the research ethics committee CEP/UNIMEP 99/11(13/12/2011).

The subjects of this study were 13 soccer physical trainers (PT) and 13 coaches (C) from the 20 teams that classified for the first phase of the A-series Paulista Soccer Championship in 2012.

Data collection occurred between the months of January and April 2012 and access to the subjects in the study involved the following steps: 1) Initial contacts, mediated by the teams press representatives, in order to obtain authorization to conduct the study; 2) Once this authorization was obtained, visitations were scheduled for data collection. The researcher travelled to the cities where the teams were based, playing or practicing; 3) Meeting with the coach and physical trainer in order to present the study, read, explain and sign the Free informed--consent term; 4) Data collection.

There were some difficulties faced throughout the several steps, such as: no response from some of the representatives or lack of authorization; schedules did not match, since some of the teams were competing in other out-of-state championships or were concentrated for training with no access or contact possibility with the team. These difficulties accounted for the fact that, from the twenty teams participating in this specific championship, seven were not included in the study.

Data collection involved the completion of the Vocal Signs and Symptoms Questionnaire (VSSQ) and the Vocal Tract Discomfort Scale (VTDS), in the moments before games or practice sessions.

The Vocal Signs and Symptoms Questionnaire (VSSQ)[14] was translated and adapted for use in Portuguese and, in spite of not being validated, was used in Brazil[13-16] in studies aiming to determine the occurrence of vocal signs and symptoms. It consists of 14 items: hoarseness, tired voice or voice change after short vocal usage; spoken or singing voice problem; difficulties projecting voice; loss of singing voice extension; discomfort while using the voice; monotonous voice; strain while speaking; chronic dry throat; frequent phlegm; acid or bitter taste; difficulty swallowing; and shaky voice. The answer to the VSSQ is calculated by the simple sum of the number of vocal signs and symptoms reported by the subjects, without a cut-off value to formally classify the obtained results.

The Vocal Tract Discomfort Scale (VTDS)[12, 17-18], is not yet validated and was also translated into Portuguese. It is composed of eight possible manifestations of vocal tract discomfort that, being evaluated according to frequency and intensity may score between zero and six: burning, tightness, dryness, painful throat, itching, sensitive throat, sore throat and lump in throat. The higher the score, more presence of vocal tract discomfort. Regarding frequency, each item in the CTDS is assessed on a scale of zero to six where zero means 'never'; one to three, 'sometimes'; four to five, 'many times'; and six means 'always'. The VTDS measures intensity on a scale where zero represents 'none'; one to three, 'light', four to five, 'moderate'; and six is an 'extreme' condition. The total score for each subject can vary from zero (eight questions with zero points each) to 48 points (eight questions with six points each) [12, 17,18]. By calculating each subject's score on the VTDS, the mean scores regarding the occurrence, intensity and frequency of the discomfort may be calculated, according to each category.

The VTDS is a self-assessment instrument that enables the identification of the subjects' sensory perception of vocal tract discomfort, since the discomfort indicates a low level of pain, in the scale of 'absence of pain' to 'unbearable pain'; and represents an important symptom that is not Always valued in clinical practice [12]. The VTDS instrument is also useful in assessing and monitoring progress in treatment of work-related voice disorders [18].

Thus, in the present study, the subject's answers were also classified and analyzed considering the specific quantification of complaints/problems shown in each instrument (VSSQ and VTDS): "zero to two" or "three or more", according to professional category. In this case, only the answers varying in values between one and six in the VTDS were considered (corresponding to the presence of discomfort, regardless of it occurring "sometimes", "many times" or "always") and the answers valued zero (absence of discomfort) were not considered.

A statistical analysis of the obtained data was conducted, considering the number of vocal signs/symptoms n the VSSQ; the number, frequency and intensity of the vocal tract discomforts in the VTDS and also the comparative statistical analysis of subject distribution according to the number of answers regarding complaints/problems shown in each instrument: signs/symptoms (VSSQ) and discomfort (VTDS), according to professional category.

The following tests were conducted for statistical analysis: Fisher Exact Test, Chi-Square and Mann-Whitney. The tests were processed on SPSS 17.0, with significance level 0.05 comparing the prevalence of the VSSQ and VTDS, according to categories.

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Results

Table 1. COMPARATIVE STATISTICS OF THE MEAN NUMBER OF SOCCER COACHES AND PHYSICAL TRAINERS FOR THE VARIABLES: NUMBER OF VOCAL SIGNS AND SYMPTOMS (VSSQ) AND OCCURRENCE, FREQUENCY AND INTENSITY OF VOCAL TRACT DISCOMFORT (VTDS).

	VARIABLE	MEAN BY CATEGORY		P-value
INSTRUMENT		PHYSICAL TRAINER	COACH	
VSSQ	Signs and Symptoms	2,38	2,17	0,71
VTDS	Occurrence of Discomfort	3,62	3,31	0,72
	Frequency of Discomfort	7,69	6,77	0,31
	Intensity of Discomfort	9,15	7,00	0,31

p-value = descriptive value of Mann-Whitney Test.

Table 2. COMPARATIVE STATISTICS OF THE PREVALENCE OF VOCAL SIGNS AND SYMPTOMS (VSSQ) ACCORDING TO PROFESSIONAL CATEGORY.

VOCAL SIGNS and SYMPTOMS (VSSQ)	CATEGORIES		P-value
	PHYSICAL TRAINER	COACH	
Hoarseness		31%	0,21
Tired voice/change in quality after short vocal usage	29%	31%	0,66
Singing or Spoken voice problem	0%	15%	0,24
Difficulty in voice projection	14%	23%	0,50
Loss of singing voice extension	14%	23%	0,50
Discomfort while using the voice	43%	15%	0,10
Monotonous voice	0%	8%	0,50
Strain while speaking	21%	8%	0,29
Dry throat	29%	8%	0,16
Chronic Throat pain	0%	0%	
Frequent phlegm	21%	15%	0,50
Bitter or acid taste	7%	23%	0,29
Difficulty swallowing	0%	8%	0,50
Shaky voice	0%	8%	0,50

P-value = descriptive level of Fisher Exact Test

Table 3. COMPARATIVE STATISTICS OF TEH MEAN SCORES OF FREQUENCY OF THE CATEGORIES, IN EACH TYPE OF VOCAL TRACT DISCOMFORT.

TYPE OF DISCOMFORT (VTDS)	MEAN FREQUENCY		
	COACH	PHYSICAL TRAINER	P-value
Burning	1,00	0,92	0,76
Tightness	0,38	0,46	0,58
Dryness	1,69	1,85	0,69
Painful throat	0,54	1,00	0,48
Itching	1,31	0,92	0,39
Sensitive throat	0,85	1,23	0,69
Sore throat	0,77	1,00	0,51
Lump in throat	0,23	0,31	0,76

p value = descriptive level of the Mann-Whitney Test.

Table 4. COMPARATIVE STATISTICS OF THE MEAN SCORES OF INTENSITY OF THE CATEGORIES, IN EACH TYPE OF VOCAL TRACT DISCOMFORT..

TYPE OF DISCOMFORT (VTDS)	MEAN INTENSITY		
	Category		P-value
	COACH	PHYSICAL TRAINER	
Burning	0,46	0,62	0,69
Tightness	0,23	0,00	0,34
Dryness	0,92	1,23	0,36
Painful throat	0,38	0,62	0,48
Itching	0,77	0,62	0,51
Sensitive throat	0,54	0,69	0,65
Sore throat	0,54	0,85	0,29
Lump in throat	0,08	0,23	0,15

p value = descriptive level of the Mann-Whitney Test

Table 5. COMPARATIVE STATISTICS OF THE DISTRIBUTION OF SUBJECTS

Number of answers regarding complaints/ problems	QSSV (p=0,22)		EDTV (p= 0,65)	
	COACHES	PHYSICAL TRAINER	COACHES	PHYSICAL TRAINER
0 a 2	10 (77%)	6 (46%)	4 (31%)	3 (23%)
3 ou mais	3 (23%)	7 (54%)	9 (69%)	10 (77%)

p = descriptive value of Fisher Exact Test

Figure 1. Chart of the greatest prevalence of occurrence of discomfort manifestations on the VTDS, in frequency and intensity, according to category..

EDTV manifestação de desconforto	**Frequência**		**Intensidade**	
	COACHES	PHYSICAL TRAINERS	COACHES	PHYSICAL TRAINERS
Dryness	9 (69,23%)	10 (76,92%)	FÍSICOS	10 (76,92%)
Itching	9 (69,23%)		8 (61,54%)	
Sore throat		9 (69,23%)		9 (69,23%)

Discussion

The test result in Tables 1, 2, 3, 4 and 5 show no statistically significant difference ($p>0.05$) between the categories, regarding occurrence, frequency and intensity of vocal sign, symptoms and discomforts.

In spite of studies that show the specificity of situations, work activities and operational modes of Soccer Coaches and Physical Trainers[2], it may be considered that the risk factors for voice disorder impact negatively and without distinction with health-illness-care process of workers linked to soccer [2-7]. This does not exclude the Physical Education teachers [3; 9-11].

Future studies using control groups should be conducted, in order to further investigate and compare the main categories of workers linked to sports. The perspective is to identify the possible vulnerability conditions and/or coping and protection strategies of each one, faced with risk conditions and the factors that are determinant and predisposing of the health-illness-care process regarding the voice. Therefore, it is worth mentioning that studies based on the Ergonomic Work Analysis may contribute with data about the relationship between work activities and conditions and health ailments.

The mean number of vocal signs/symptoms reported by the Coaches (2.17) and Physical Trainers (2.38) through the VSSQ (Table 1) was greater than the one obtained for subjects of the general population (non-teachers), when compared to another Brazilian study (1.7) [13]. However, it was smaller than the mean of the general population (non-teachers) when compared to a North American study (3.1) [14]. This number is also smaller when regarding voice professionals with high prevalence of voice disorders, such as telemarketing professionals (6.8) [20]; Brazilian teachers (3.5/3.7) [13] and North American teachers (4.3) [14]. It should be noted that there were no references found that indicated VSSQ completion by soccer Coaches and Physical Trainers.

Table 2 shows that, for both categories, the Signs/Symptoms that were most often reported in the VSSQ were hoarseness and tired voice. A current study3, shows that all soccer coaches had vocal symptoms – likewise, hoarseness and fatigue were the most frequent, as was also verified in teachers 3.

Hoarseness is a sign/symptom that may suggest a risk for voice disorders, dysphonia and incipient voice conditions, showing laryngeal lesions such as nodules, edema, polyp and hemorrhage, among others [9,15,16]. Other studies with soccer coaches have also identified hoarseness and vocal fatigue/tiredness [3,4] and hoarseness, voice failure/loss, phlegm, tiredness when speaking, and neck tension [6]; and, with soccer managers: hoarseness, vocal tension, vocal fatigue, and temporary voice loss [5]. Hoarseness was also one of the most often reported signs and symptoms by Physical Education professionals [10] as well as by teachers with vocal complaints [15,16].

There are controversies about the number of signs/symptoms that account for an alert and/or risk of voice disorders. The cut-off reference points vary among different instruments and several categories. In spite of this, studies that show the presence of three or more symptoms as indicative of risk for voice disorder are highlighted here [19], and, up to three vocal symptoms may be expected for professionals such as teachers [21]. The percentage of the prevalence of Physical Trainers that had three or more vocal signs/symptoms represented more than double, when compared to the Coaches (Table 5).

It should be considered that vocal signs and symptoms may be caused by vocal use in professional activities, with or without relation with individual predisposal and environmental factors, so as to characterize problems such as the Occupational Dysphonic Syndrome [22]. Thus, the search for vocal signs and symptoms should be valued in the group of basic actions involving diagnosis, therapy and prevention of problems related to the phonation system [22,23], in addition to contributing to the identification of a measurable complaint. The number of symptoms may be a determinant factor in defining control groups in studies with voice professionals [21].

The results for the mean occurrence of reported discomforts in the VTDS, in both categories (Table 1) are alarmingly similar to those of teachers with voice disorders who have at least three symptoms of discomfort [12]. Likewise, it is cause for apprehension that the mean intensity scores of discomforts, in both categories of this study, is beyond the mean intensity degree of teachers with voice complaints (6,3) [12]; and draws close to the mean scores of subjects with voice disorders, after vocal therapy (10) [18]. Recent studies show that soccer coaches

undergo intense vocal demands during their professional activities. They also show data (phonation time, high vocal intensity in noisy environments, fundamental voice frequency and vocal strain) that increase the risk for vocal problems, as is the case of Elementary Education teachers, telemarketing professional and other categories with an assumed "moderate" level of voice usage [3]. On the other hand, the possibility of Coaches and Physical Trainers being more sensitive to the perception of and reporting vocal discomforts than teachers, who have difficulties perceiving the health-illness-care process regarding their voices, must also be considered.

Caution is needed when comparing soccer professional with other professional voice users [3], considering that the time of vocal usage varies widely. Thus the results show the need for future studies and further investigations.

Table 3 showed that the most frequent discomforts on the VTDS for Coaches were: dryness, itching, burning, sensitive throat, sore throat; and, for Physical Trainers: dryness, sensitive throat, sore throat, painful throat, burning and itching. Physical trainers, therefore, had one more type of discomfort when compared to Coaches.

Table 4 indicates that the discomfort with greatest intensity on the VTDS was dryness, for both categories. Subsequently came: itching, sensitive throat, sore throat and burning for the Coaches; and sore throat, sensitive throat, itching, burning and painful throat for the Physical Trainers. Physical Trainers had more kinds of discomfort with greater intensities than the Coaches.

In short, for both categories dryness prevailed as a vocal tract discomfort, with higher means of frequency and intensity. The prevalence of the discomfort 'dryness' and dry throat symptom also occurred in studies with teachers [12, 15] that show a relation with the interference of emotional and risk factors on the voice [15]. One study with soccer Coaches and Physical Trainers [2] has shown that these categories face situations involving emotions and feelings of anxiety, discontent, impatience and tension, worsened by the stress of competition that may generate: dryness of mouth/throat and laryngeal tension. It has also shown that habit of drinking coffee (3 PT; 4 C) before and after practice sessions. The subjects have a general concern regarding hydration, without a clear perspective of its importance to vocal production and vocal health [2]. Future studies may aid the identification and elucidation of the factors that cause dry throat in soccer Coaches and Physical Trainers.

The sensation of dryness in the vocal tract mucosa may also have several causes, such as: tobacco, caffeine, oral breathing, insufficient hydration, allergic or inflammatory conditions, and regular use of anti-hypertensive, decongesting, alpha-androgenic, anti-histaminic drugs, diuretics, corticosteroids, neuro-stimulators, anti--depressives, isotretinoin and excess of vitamin C. Climate (high altitudes) and environmental (use of heating and/or air conditioning devices) conditions may also cause dryness of the throat.

The presence of vocal discomforts merits attention. There are a high percentage of subjects, in both categories with three or more kinds of discomforts, the same as teachers with voice disorders [12-13]. The discomforts have been associated to signs and symptoms, and they may indicate or be related to several factors, such as excess tension in professional voice production, presence of voice disorders, negative perceptions regarding one's own voice, and the dissatisfactions and limitations of those who depend on their voices for work [12.] Thus it is very important to try and understand the perceptions that the subjects have about the voice and problems such as vocal tract discomforts [12-13].

Vocal discomforts are important indicators that should be valued and considered in understanding the health-illness-care process related to the voice, especially when regarding Speech-Language Pathology and Audiology screenings, educational and clinical practices, accessories, among others that impact the well-being, health, communicative performance and vocal quality [15,16;24-27].

Studies show that stress and anxiety conditions affect the communicative behavior of individuals and modify body, speech and voice, with effects involving the increase in pitch and fundamental frequency, as well as disorders in articulation, resonance, modulation, breathing and phonation coordination, body movement and facial expression [16,26,28]. Special attention must be paid to long-term voice use in increased fundamental frequency, which increases vocal overload [29].

Table 5 shows that there is no association ($p>0.05$) between the categories, according to the number of responses with three or more types of complaints/problems (vocal signs/symptoms and discomforts) in VSSQ and VTDS.

Finally, it is shown that in spite of the tests not having shown statistically significant differences between the categories, a comparative analysis of the result values of the present study shows that the category of Physical Trainers had the highest percentage of vocal signs and symptoms, higher number of vocal tract discomforts that were also more frequent and intense, as well as a higher percentage of occurrence of three or more complaints/problems.

A healthy voice has flexibility and variability according to the environment, the situation and context of communication, in addition to offering vocal resistance conditions for intensive use in connected speech, without fatigue and changes to the initial vocal quality. Thus, the complaints, discomforts, signs and symptoms presented by the subjects alert towards a possible risk condition for dysphonia that merits investigation.

Future studies are needed in order to better understand professional voice use and the vocal health of soccer Coaches and Physical Trainers.

Conclusion

In spite of there not being statistically significant differences between the categories, the soccer Coaches and Physical Trainers had discomforts, signs and symptoms that may show tension in professional voice production and represent an alert for possible risk conditions for incipient vocal problems.

Physical Trainers had higher percentages of occurrence of three or more types of complaints/problems, of vocal discomforts, signs and symptoms in higher mean of occurrence, and also more frequently and intensely. This finding shows that this category deserves the attention of future studies.

The issues concerning professional voice use and vocal care and health merit attention from soccer Coaches and Physical Trainers and also of health field professionals (especially those in Physical Education, Speech-Language Pathology and Audiology, Psychology and Workers' Health) and Education professionals. They also should be contemplated in social spaces and educational spaces in training of Physical Education professionals.

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