DEVELOPING A CORPOREAL REFLECTIVE VOICEPILATES INTERVENTIONS FOR ESTONIAN TEACHERS' VOCAL NEEDS

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Abstract
Estonian teachers are at high risk of voice problems. In 2004-2005, 170 higher and pre-service teachers answered two voice questionnaires. Vocal education programs may prevent the emergence of vocal pathologies, using one-day study course "Teachers' Voice", in the frames of which the embodiment-based vocal training method VoicePilates is characterised and used. This method developed in Tallinn University and tested as multiple case-study with 240 Estonian teachers in 2005-2011 to identify, using open-ended semi-structured post-questionnaire, the self-perceived changes in the mechanics and sensation parameters of participating teachers´ voice, posture and body alignment, and to gather teachers' suggestions for continuing to develop the course. The key themes that emerged and helped continuing the course development, were: 1) Theory; 2) Organizational; 3) Practical voice and 4) Practical bodywork.
Keywords: *voice disorders, teachers, primary prevention, direct and indirect training, voice intervention design*

Introduction

Of all occupations, those engaged in teaching, are considered to be the most at-risk of incurring voice problems, this being common among teachers worldwide (Fritzell, 1996; Titze et al., 1997; Smith et al., 1998; Roy et al., 2005; Lyberg Åhlander et al., 2011b). Teaching requires vocal endurance, often in stressful conditions, where there is an expectation of optimal voice quality, and in environments that encourage ineffective voice use (Duffy & Hazlett, 2004). The vast majority of teachers, being professional voice users, are unaware of how to maintain or improve on their voice, which is their greatest professional asset and communication tool (Hazlett et al., 2009). Three levels of prevention are to be considered (RCSLT, 1996). Primary prevention, being ideal and most cost-efficient, promotes good practice before a problem has been identified, and one suggested method is voice training (Duffy & Hazlett, 2004). Secondary prevention is concerned with the identification of a problem, as the third level, tertiary prevention, focuses on the remediation of the impairment, disability, or

handicap of a condition (ibid). One of the main factors contributing to the high prevalence of voice disorders is the lack of voice training especially during teaching training courses (Niebudek-Bogusz et al., 2008). Vocal education programs for teachers, which include correct voice use training and information about vocal hygiene, may prevent the emergence of vocal pathologies (Bovo et al., 2007).

Voice practitioners from all over the world use following words to describe the perfect voice: healthy, expressive, connected, open, released, flexible (Shewell, 2009). Hollien suggests that 'good voice' has a lower than average habitual pitch level, softer rather than a louder voice level, variability in both loudness and pitch, a slower than average speaking rate and will 'not exhibit noise' (such as breathiness, harshness) (see Shewell, 2009).

According McAllion, speaker should always be able

a) to use the voice without hurting oneself in the process;
b) to use the voice fully and energetically for as long as he/she wants in a day with no deterioration of flexibility during that time;
c) to convey all the accuracy, subtlety and emotional expression needed for work demands, with the voice remaining absolutely under his/her control (see Shewell, 2009).

Voice is produced by coordination of three systems: respiration (lungs and diaphragm), phonation (the larynx, specifically the vocal folds), and resonance (the movement of the resulting sound waves through the vocal tract, the supraglottic spaces of the mouth and nose) (Shewell, 2009). In all of these systems voice depends on different movements: 1) movement of the muscles of respiration and skeleton keeping us upright; 2) movement of vibration of the vocal folds and of the air that becomes sound; 3) (a) movement of the tongue, lips, jaw, palate, cheeks; (b) movement of the muscles of the larynx, pharynx, the base of tongue. To be able to move such a complex system, the voice depends on the work of the rest of our systems (skeletal, muscular, and nervous). The vocal tract consists of face, lips, tongue, soft palate, pharynx, and larynx; by moving these parts, the resonance is created. When higher and lower qualities resonate together, the voice is rich in nuances and sounds pleasant (called *'chiaroscuro'*, the same time 'bright and dark' in Italian). Normal breathing is a function at the subcortical level (Eerola, 2017). The thoracic diaphragm moves up and down to regulate the air pressure, but is itself half-conscious. The muscles of the rib cage and the spine, where the diaphragm is connected, do the work. The abdominal area must be free to let the thoracic diaphragm move flexibly and the normal breathing must be free and deep. Ongoing daily effort and practice is needed to be aware of the tensions in the body.

In phonation breathing, the speaker has to let the subcortical breathing do the work and 'will power' and emotions take care of phrasing and at the same time keep the torso open (Eerola, 2017). This is not a muscular function, instead it is a matter of posture and 'excitement'/'will power'/'living' the phrase/word, where the 'excitement' of the expression automatically prepares the body to expand into the prephonatory state (ibid). The torso expands; diaphragm descends and causes the 'tracheal pull', causing so-called vacuum effect in the rib cage, thus air coming in automatically. Exhaling triggers an autonomous reflex to collapse the ribcage area, thus the breath 'support' meaning that speaker needs to keep himself/herself flexibly open in the ribcage area until the end of the word or sentence; otherwise natural reflexes make him/her to

'collapse'. The work of the vocal cords is a unique and specific process, happening properly only if this area is unrestricted, and the process not interfered with by muscle contraction. Any habits of tension in voice production are doubled here at least 8 million times per day (normal 8-h working day of teachers), which hurts the soft tissue and muscles of vocal cords, not to mention the tight and unpleasant sound the listener hears. The function of speaking should be aimed as much as possible at a subcortical automatic level of the brain. As to how to produce sound, resonance and vowels that should be left to the reflexive part of the brain not using the 'straight-up conscious orders' to subcortical functions. The only way we can improve our voice is to use better 'preparation' for voice resonance areas inside of our body, before the voice starts. Chest voice (deeper sounds, authority, strength in the voice) needs activation of the lower body, head voice (clarity, precision, higher sounds) needing activation of the head area, using 'surprising'/'smiling' feeling in the mouth/nose/eyes, thus opening the spaces in the body for voice resonance. Because of higher overtones of the resonance, the voice is then easier to listen, speaker will have less tension in the larynx and will look and sound like it is easier and more comfortable for him/her to speak.

Research Background, Aim of the Study and Design

This paper provides a multiple case study of the development of study course *Teachers' Voice* in Tallinn University for supporting the Estonian teachers' vocal needs in field condition. Research was carried out in two phases: 1) in 2004-2005 gathering information about the situation in Estonian teachers' voice condition and their needs for vocal training; 2) based on the gathered data, in 2005-2011 developing and testing the content of the voice course.

According to Yin (2003), a case study design should be considered when

a) the focus of the study is to answer 'how' and 'why' questions, as was the case in both phases of the current study;
b) you cannot manipulate the behaviour of those involved in the study;
c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or
d) the boundaries are not clear between the phenomenon and context.

Two key approaches to case study methodology (Stake, 1995; Yin, 2003) base work on a constructivist paradigm, one of the advantages of it being the close collaboration between the researcher and the participant, while enabling participants to tell their stories, which was an important part of the 2nd phase of the study.

In this study, the exploratory case study has been used to explore those situations in which the intervention being evaluated has no clear, single set of outcomes (Yin, 2003). This study was also a multiple case study, enabling the researcher to explore differences within and between cases (in this study voice training), and the goal being to replicate findings across cases. According to Yin (2003), the multiple case studies can be used to either to *"(a) predict similar results (a literal replication) or (b) predict contrasting results but for predictable reasons (a theoretical replication)"* (p.47).

Research questions, methods, participants and the context of the 1st phase of the research

At phase 1, in 2004-2005, 10 one-day voice hygiene courses were organized with 170 Estonian higher and pre-service education teachers, group size being from 10-30 persons (the author acting as the educator of the courses). These universities and kindergartens had reached out for organizing the courses, because there were not much voice hygiene courses available in Estonia then. Gathering data from these courses was thus a convenient example. To be able to offer in the future the courses exactly matching the needs of the participants, the research questions for the 1st phase of the research were:

1) *What is the situation in Estonian teachers' vocal health?*
2) *What needs teachers have for their voice education from field condition?*

To answer the research question 1, participants filled in two questionnaires, before entering the course. Both questionnaires (*The Risks and Contributions of Voice Disorders* and *How is Your Voice?*) were modified from Finnish Occupational Safety & Health questionnaires, used also in Smolander et al. (2006). The first questionnaire consisted of seven questions, categorical scale being not at all, partly/not so often, moderately/every week, and very much/every day. The second questionnaire had two parts, first with 10 and second, called "At work", with 13 questions on voice, working background and stress aspects, rated on a categorical scale of "Yes, No, Can't say".

To answer the 2nd research question, the 'portfolio work' was used, gathering trainer's field notes, reflective diaries and intervention contents as a portfolio, with the purpose of picturing trainer's professional growth and development as well as the changes in the courses, for enhancing the building of professional identity and narrative identity work (Vainio, 2018a, 4). The main aim was to understand the needs teachers have for their voice in field condition for better development of teachers' voice training. Narrative reflections, thus experiencing 'oneself' as a production of self-achievement, choosing and verbalizing relevant representations for one's own identity building, represent teachers' textual interpretations of their lived experiences and were partly explained in Introduction of this article.

Research questions, methods, participants, data collection, analysis and the context of the 2nd phase of the research

In the second phase of this research, in 2005-2011, the study course *Teachers' Voice* was tested with 240 Estonian higher, normal and pre-service teachers in 19 in-service 1-day interventions, which consisted of voice hygiene lecture and group voice trainings. Open-ended semi-structured post-questionnaire was used to measure the effects of the course in Estonia: 1) The grading for the course on scale from 1-5; 2) What do you want to know more of; 3) Was there something too much, too little; 4) What did you like most; 5) Suggestions for the course development.

Applied Thematic Analysis (ATA) of exploratory study, commonly used to generate hypotheses for the further study, was used in the second phase of the research. The term applied is considered as something that has to do with understanding the world and trying to answer research problems of a more practical nature, as was the case in this study. Defining features of ATA are:

- Identifying key themes in the text;
- Themes are transformed into codes and aggregated in a codebook;
- Using techniques in addition to theme identification, including word searches and data reduction techniques;
- Can be used to build theoretical models or to find solutions to real-worlds problems, as was the case in this 2nd phase of the study (Guest et al., 2012).

The epistemological leaning of the ATA is

- Positivist/Interpretive, meaning positivist in that assertions are required to be supported with evidence (text);
- Processes are also systematic and qualification can be employed;
- Methods and processes in ATA (except those of a quantitative nature) can be also used in an interpretive analysis.

Guest et al (2012) considers the strengths of APA as following:

- it's suitable to large data sets;
- inclusion of non-theme-based and quantitative techniques adds analytic breadth;
- interpretation is supported by data;
- can be used to study topics other than individual experience;
- it's pragmatic focus tries to use the all appropriate tools to analysing the data in a transparent, efficient, and ethical manner.

One of the limitations of APA is that it may miss some of the more nuanced data.

Permission for all phases of the research was obtained from hosting universities, schools and kindergartens as well as from Tallinn University. Participation was voluntary, and the participants had an opportunity to withdraw from it at any time, and also to ask about more detailed information about the research and the course. All participants received written information about research objectives and goals. The research data was handled and preserved according to *Estonian Personal Data Act* (RTI 2007, 24, 127). All measurements and statistical analyses of the data were done without personal information and names, only with randomly picked number codes. To protect the confidentiality of the participants, the pseudonyms and de-identifying academic institutions, schools and kindergartens were used. All data and materials were saved in locked storage space.

Results

Answers to questionnaire "How is your voice?"

Answers of Estonian pre-service and university teachers in 2004-2005 see in Table 1 (Appendix 2).

Most significant percentages from "Every day" are the need to cough (32%) and the voice in mornings being lower and hoarser (24%). As most of the participants were females, the long and repetitive periods of voicing may threaten the vocal endurance especially for females, who could experience during one workday a million (or more) vocal cord vibration cycles (Rantala, 2000), as for males the vocal loading because of

their lower basic frequency can be only half of this amount (Ohlsson et al., 2016). The biggest percentage for every week is the *"Voice getting overloaded and tired"* (32%), voice getting lower and hoarse and the coughing need being also relatively lot mentioned (22%, 18% and 18%). The symptoms of vocal disorders can occur as among the following: voice getting tired, hoarse, or the loss, weakness or roughness of the voice, inability to sufficiently change the pitch or volume of the voice or physical discomfort or abnormal perceptions in throat while speaking, i.e. the uncomfortable, tired, hoarse or aching feeling in the throat as well as when speaking needs more physical effort as usual (Pekkarinen et al., 1992; Sapir et al., 1993; Sihvo, 1997; Mattiské et al., 1998; Smith et al., 1998; Sala et al., 2001; Simberg, 2004; Simberg et al., 2005; Ilomäki, 2008). Although from the table above the "not so often" percentages and also the "not at all" - answers for Q4 (44%, 38%) and Q5 (48%, 38%) tell that teachers don't lose their voices unexpectedly or don't have difficulties to make themselves heard, there is a considerable amount of different voice problems Estonian teachers face every day and every week.

In addition, the author needed to explain all the questions to participants at every course, as if the participants seemed to be thinking about vocal issues for the first time in their life, needing in-depth explanations for every question. Ilomäki (2008) points out that sometimes teachers could have a dismissive attitude to their voice problems, as for one reason it is difficult to get a sick leave because of voice problem. Researchers (Morton & Watson, 1998) have also pointed this out: teachers seek medical advice less than other occupations. Vilkman (2000) argues that the weak Occupational Safety and Heath aspect of teachers' voice problems have been based on voice usage being seen as belonging to speech communication and behavioural sciences, the result of 'tackling' the voice problems thus being as an issue of 'training the right voice usage'. This worldview contains the assumption, that the speaker sees mostly himself/herself as responsible for his/her voice condition, this thus also containing a slight guilt feeling. This we can see also in the voice research by focusing a lot on what is 'incorrect in speaker's speaking habits', seen and used in literature also as terms voice abuse and voice misuse (i.e. Colton & Casper, 1990). Perhaps, these feelings of guilt and incompetence are not the best basis for speakers' vocal well-being and endurance, also when developing new trainings. Interestingly, 14 years later, as the writer is still working with Estonian teachers in 2018, the teachers say (as comparison to Q4 in this questionnaire) that nowadays they do have the problems to make themselves heard, as the teaching methods have changed to more participatory ones and also the background noise in classes has risen. Kompus (2010) states that in Estonia every third female teacher has voice problems, most of the teachers (68%) having too much voice loading in work. Secondly, teachers' voice loading has not changed within last years due to voice problems, but they have changed their working style as giving up from too much verbal instruction etc., affecting learning process negatively (ibid).

Answers to the questionnaire „Risks and contributions for voice disorders"

Answers of Estonian pre-service and university teachers 2004-2005 see in Table 2 (Appendix 2).

Numerous researches show teachers reporting different voice disorders from mild to severe, part of it being vocal fatigue (Q1 in the questionnaire above) (Pekkarinen et al.,

1992; Smith et al., 1998; Mattiské et al., 1998; Rantala, 2000; Simberg et al., 2000; Yiu, 2002; Simberg et al., 2005). Voice disorders are often multi-factorial in nature (Smolander et. al., 2006). The four basic risk components of occupational voice disorders comprise environmental, life style, health and psychological factors (ibid). Q3-Q10 cover the personal speaking style, psychological factors and voice hygiene skills that affect the vocal loading. Phonatory effort, that is 'central fatigue', leads to compensatory functional changes (eg, greater adduction of the vocal folds), which, in turn, leads to alterations of neuromuscular processes and changes of the *lamina propria* (eg, prevention of a stable blood circulation and organic micro-changes). These alterations result in non-volitional changes of voice quality, that is 'peripheral fatigue', increasing the phonatory effort, further leading to increased central fatigue, and so forth (Lyberg Åhlander et al., 2011a). Accordong Ohlsson et al. (2016), the individual risk factors for the students with voice problems included previous vocal and speech problems in childhood or adulthood, frequent throat infections, airborne allergy, smoking, hearing problems, voice-demanding work, and voice-demanding hobbies. As asked in Q1, Q3 and Q4, some factors affecting the voice (i.e. the upper respiratory infections) could in some case cause the threat with permanent vocal problems (Carding & Wade, 2000; Sala et al., 2001; Vilkman, 2000).

Answers, that mainly contributed to developing the teachers' voice course, were Q5, Q6, as well as for 'background information' Q2, Q7-10. The results show that 37% of teachers think that they are not using their voice properly, as the 34% are using the voice properly. Still 91% of participants think that they need to learn to use the voice in more effective way, which served as a basis for developing the new voice course. The overall usage of the voice (as asked in Q2, Q7-9) helps to build the vocal hygiene skills. Understanding one's natural tendencies, such as being talkative, using loud volume, quick pace, having stage fright, will help to understand how these can affect the voice as risk factors. It has been indicated that vocal risk factors are cumulative but preventable (Vilkman, 2000, Williams & Carding, 2005). Duffy & Hazlett (2004), as well as Ilomäki et al. (2008) reported that direct training was more beneficial than indirect training among the postgraduate student teachers and primary school teachers.

Answers of Estonian pre-service and university teachers 2004-2005 see in Table 3 (Appendix 2) ("Risks and contributions for voice disorders, part 2, at work").

The answers to Q1 show that 93% of teachers use their voice a lot during the workday. Noisy environments and big classrooms with a lot of echo compel also the teachers to raise their voice significantly, although they may not perceive it that way (Q2), also when the listeners are sitting relatively far (Q3), they need more volume and projection from the voice, thus adding vocal loading (Pekkarinen et al., 1992). Working positions, as asked in Q12 and 13, also affect the vocal production (Sihvo, 1997) and lifting and/or bending positions can accelerate the reflux (Sala et al., 2001). In the voice clinics, patients with voice problems often mention aspects of the indoor climate in classrooms or offices to be troubling. The most commonly mentioned aspects are 'dry air', 'poor air', and dustiness (Q 6-9). One additional factor sometimes mentioned is 'bad smell' because of dirty filters in the airshafts (Q8) (Lyberg Åhlander et al., 2011a).

According to Ohlsson et al. (2016), feelings of stress or distress may influence the voice in a negative way. As shown in Q10 and 11, questions about the overwhelming and work exhaustion the answers are quite 50/50%. The biggest negative effect, voice problems

have to teacher voice, is their emotional state and the quality of life (Ma & Yiu, 2001; Yiu, 2002; Roy et al., 2005), also being insecure, stressed, isolated. Most of teachers avoid hobbies, which demand much voice using, such as singing (Smith et al., 1998; Sala et al., 2001; Roy et al., 2005; Kooijman et al., 2006).

What is needed from study course "Teachers' Voice" content?

Diverse vocal requirements for teacher's work include, among others, the following: clarity and receptivity for message transmission; accessibility and friendliness of the communication style for facilitating a positive working atmosphere and formatting the assertiveness and persuasiveness of the teacher-student relationship (Nussbaum, 1992, 173). From a nonverbal point of view, voice is a key channel in expressing these (Ilomäki, 2008, 21).

Preventive strategies are recommended to reduce the risk of voice disorders, voice training being one of the strategies (Child & Johnson, 1991; Duffy & Hazlett, 2004; Williams & Carding, 2005). Kompus (2010) suggests that teachers' voice training in Estonia should be available for all teachers in teacher training. It should include practical voice work, in-depth vocal hygiene lectures and phoniatric study. Voice therapy and training should be available also for all teachers in field condition, thus improving the knowledge about vocal health, healthy voice usage techniques and awareness about the effect of vocal loading, environment, lifestyle habits and emotional state to teachers' vocal health and quality. To be able to implement these habits as life-long, there is a need for a systematic long-term period training. Kompus (2010) also suggests that phoniatrists, who are working at schools, could be asked to organize voice trainings, as well as assisting and coaching colleagues when any vocal problems occur. As the financial resources for schools are limited, the same resource being used also for buying the microphones for teachers or assisting teachers for taking part in the voice trainings, these courses must be cost-efficient, which makes their length an issue. The course length and intensity of its content have been an issue for the writer from 2004, and it is pointed out several times by participants of the 2nd phase of this study.

To answer the 2nd research question (*What is needed from study course "Teachers' Voice" content?*), the trainer's field notes, reflective diaries and intervention contents were studied.

For the best vocal loading and optimum vocal fold condition, as for maximum acoustical benefit with minimum mechanical and physiological tissue strain, the lateral breathing, where the diaphragm descends freely, is needed (Laukkanen & Leino, 1999; Eerola, 2017), establishing a phonation balance on the vocal fold level (Vainio, 2018a). Bodily knowledge can cultivate teachers to trust their own body awareness and embodied responses in order to understand the voice production, the usage of one's own voice and after that taking more responsibility for the voice production as a physical exercise (Vainio, 2018a). The study course *Teachers' voice* was based on VoicePilates (VP), motor learning theory based practical method, helping to learn new muscle memories for phonation balance (ibid).

One-day course consisted of indirect and direct training parts with six interchangeable tenets: corporeal awareness; posture alignment; balanced speech; context-based simulation exercises; video training and reflective feedback (Vainio, 2018a). Direct experiential learning, building self-awareness of the voice through the somatic self-

discovery of physical, sensory and auditory perceptions, consisted of four sections of exercises: 1) The Reflection, 2) The Body, 3) The Voice, 4) The Simulation (Gilman et al., 2014, 9). Direct voice training aims to train in facilitating effective techniques for voice production and retraining habitually negative vocal behavior that may not affect vocal performance for everyday needs, but it may create difficulties when given the demands of teaching (Duffy & Hazlett, 2004). Carding (2000) sees the importance of including indirect training with direct training as the two cannot be mutually exclusive.

Conceptual, theoretical, and practical foundations of the 'corporeal awareness'- and 'posture alignment'- parts of VP are given in Vainio (2018a). In Vainio (2018b) the 'context-based simulation training'- and 'reflective feedback'- parts of VP are introduced. This study focuses more on the 'balanced speech'-part of the VP, as voice exercises were the main, most important and expected part of VP courses in their beginning at 2005. As this study was a practitioner research, Aigner (2014) points out a conflict between the more distant position of the impartial scientific observer and the proactive role of the teacher managing dynamic pedagogical processes. In this research there could be found parts of the *Praxisforschung* (practice-based-research), meaning on one hand author acted as a single teacher reflecting on my own practice (Cain, 2008), with an accent on promoting self-reflection, optimizing my own teaching or publishing practical guidelines (Prengel et al., 2008). There was also a part of *Handlungsforchung* (action research) in author's work, aiming to match theory and practice, also aiming at the improvement of local practice as well as at the generation and publication of new research results (Aigner, 2014).

The effects of study course "Teachers' voice": The grading for the course on scale from 1-5

The distribution and mean of the grades from the 19 courses are given in Table 4 (Appendix 2): participants were able to give grades from 1 to 5 (first being lowest and fifth – highest).

83% of participants gave the grade 5, 15% gave the grade 4 and 2% gave the grade 3 to the course, and no grades of 1 or 2 were given. Teachers stated that as this was in most cases their first voice course in their lives; they had no expectations and were thus positively surprised about the course and its effect, this being thus comparable as self-evaluation of other studies. Also Ilomäki (2008) states that direct voice training or the combination of direct and indirect training, as this training was, have resulted as improvements in teachers' voices, when done by self-evaluations (Bovo et al., 2007), acoustically (Duffy & Hazlett, 2004; Bovo et al., 2007) and perceptually (Bovo et al., 2007). Indirect training, which was also a part of this study, has improved the voice, when studied acoustically (Chan, 1994) and by self-evaluations (Pasa et al., 2007) or maintained and prevented worsening the vocal situation, when studied acoustically (Duffy & Hazlett, 2004) and by self-evaluations (Duffy et al., 2004; Roy et al., 2005).

Participants´ assessments about the positive and negative aspects of course content

The goal of testing the study course *Teachers' Voice* was using open-ended semi-structured post-questionnaire, to identify the self-perceived changes in the mechanics and sensation parameters of participating teachers' voice, posture and body alignment, and to gather teachers' suggestions for continuing to develop the course. The key

themes were first identified in the text of answers of post-questionnaire, and after that, codes were developed to represent the identified themes and applied or linked to raw data as summary markers for later analysis (Guest et al., 2012). The key themes that emerged were:

1) Time-management of the course/ The length of the course / Overall themes of the course;
2) The balance between both theory and practice as well as between individual and group work;
3) More detailed info about exercises;
4) What I learned as a result.

The most frequent answer to *"Was there something too much/too little in the course?"* was "All was in balance" (n=82). 40 participants needed more time for the course, and 15 of them pointed out the course being very useful. 19 participants thought the balance between theory and practice was good, but 18 participants wanted more practice, less theory. Nine participants wished more individual work and six for less videoing. The needs for exercises were: more speaking and singing exercises (n=9) and more exercises overall (n=5). For more detailed wishes from participants see Appendix 1. For section "As a result", participants were more interested in pilates, felt that they had good overview and continued to work with exercises. Answering on this question, participants mentioned the balance in the course; all their suggestions ("was there something too much, little") were based mostly on individual view. As a result, there are many suggestions, made by only one or two persons, which are very interesting, but when thinking about the whole course, there is no possibility to include all themes. Another interesting thing was that the course for some participants was too long, for some too short; some wanted more theory, some more practice. Throughout the questionnaire paerticipants frequently mentioned, that a) this was the first voice course, so everything was new, and b) that was one of the reasons it was sometimes difficult for participants to answers the questions, especially to give suggestions.

The topics to be more explored in details

The key themes that emerged were: 1) Theory; 2) Organizational; 3) Practical voice work and 4) Practical bodywork themes.

The most frequent answers to *"What do you want to know more of?"* were from part 'Organizational': "All was well" (n=45), and from part "Practical voice work": "I want to know more exercises" (n=41), and "More experiential, practical exercises for changing old muscle memories" (n=21). The most mentioned theme in "Theory" was "I want to know more of my personal risks, and different methods for voice care" (n=5), and "More of anatomy and voice production" (n=3). In the part "Organizational" there were certain themes mentioned several times: "I would need more exploratory, practical trainings and material" (n=19), "I want to know more of everything" (n=15) and "I want more individual feedback with smaller group" (n=15). The interest in practical voice work was noticeable: several different types of exercises were pointed out, as "Voice exercises, methodology, plays, remedies especially for children" (n=6); "How to better project the voice" (n=7); "How to better control the voice" (n=6); "Exercises for voice care" (n=5) etc. For practical bodywork themes, participants needed more of "Breathing exercises, also for children" (n=10); "Pilates-exercises" (n=8); "Exercises for individual

posture and body alignment in speaking" (n=8); "Alexander-technique" (n=6); "How to release muscle tensions, and implement all learned skills" (n=6) etc.

In this section of questionnaire, the answers were divided into two: on the one hand, there were a lot individually (only 1, 2 or 3 same answers to the questions), but, on the other hand, for some answers as "All is well" (n=45), and "More exploratory training" (n=19) etc., there were several participants thinking the same thoughts. Therefore, this section served as a very good basis for developing the next trainings. The suggestions for part 'Practical voice work' were very interesting. Although the courses focused a lot on training simple voice exercises with excessive amount of repetitions to build the new muscle memories for the body, participants wanted to have even more voice exercises (n=41). Participants suggested practical voice work. Among already above mentioned answers were: "Supported singing, hitting high notes" (n=5); "Exercises for clearer voice, to avoid hoarseness, voice trembling, "Filling words as 'mm'" (n=3); "How to use the voice in different situations" (n=2), "Different voice techniques" (n=2); "How to observe and help others" (n=2); "Warm-up exercises for the morning and before singing" (n=2 and 2); "Different voice relaxation exercises" (n=1); "Voice exercises for connecting the head-and chest-voice to avoid the "break" (n=1); "Exercises for better usage of one´s vocal range" (n=1); "Exercises to make to voice be able to 'carry more', more intensive" (n=1); "How to project the voice for better order in class" (n=1) and the interest in Finnish vocal methodologies (n=1). These wishes are quite specific and show that there is a real interest in in-depth exercises and 'hands-on'-work on this area. Participants also wished for longer training for "Finding one's own voice" (n=2), which could also be said as 'natural', 'liberated' voice. Rodenburg says that nothing is quite so freeing and enlarging as a liberated voice and distinguishes the 'natural' voice from 'habitual', which may be encrusted with restrictive tendencies that only awareness and exercise can undo and counteract (see Shewell, 2009). Linklater described the aim of her approach as designed to liberate the natural voice rather than to develop a vocal technique and she wrote that there is a vital difference to be observed between what is natural and what is familiar (see Shewell, 2009).

The favorite topics, themes and content of the participants

The key themes that emerged, were: 1) Practicality overall; 2) Corporeal awareness; 3) Aligned posture; 4) Balanced speech; 5) Simulation exercises; 6) Video analysis; 7) Reflective feedback; 8) Atmosphere, 9) The trainer; 10) Pedagogical; 11) Suggestions and 12) What I learned.

The most frequent answers to question *"What did you like most?"* were: "Video analysis overall" (n=80); "Practical exercises" (n=54); "Individually tailored feedback for everybody" (n=42); "Good structure of the course" (n=37); "Positive, optimist, inspiring, activating, energetic, joyful, humorous, free, human, barrier-breaking atmosphere" (n=28); "Tension-releasing, friendly, nice, trustful atmosphere- the only way to be able to open oneself " (n=24); (7) "Aligned posture in standing and sitting position" (n=19); "Energetic and hard-working trainer" (n=14).

Interesting was that from participants' answers it was already possible to find the same theme categories that inspired the trainer for the future trainings, namely the five of six interchangeable tenets of VoicePilates: corporeal awareness, posture alignment, balanced speech, video analysis and reflective feedback. The 6th tenet the "Simulation" was only once mentioned here as "Improvisation exercises" (n=1). This can be

attributed to the fact that the participants did not probably recognize the 'simulation' as different from the video training, since it is part of it. In addition, the video training got most of the answers (n=80), so as a trainer's point of view; also the 'simulation' is covered here.

Participants´ suggestions for course development

The key themes that emerged were: 1) "Longer course; 2) "All is well"; 3) "Venue, organization"; 4) "Content and material", 5) "Individual work/ Smaller group size"; 6) "Nothing", 7) "Practicality"; 8) "Video" and 9) "To curricula".

The most frequent answers to *"Suggestions for course development"* were: "Longer course" (n=48); "Nothing to change/improve" (n=36); "Keep doing the good work" (n=29); "Should be mandatory and /or available for all/special area teachers" (n=21 altogether); "Smaller group size" (n=17); "More individual work" (n=10); "Better time-management" (n=8); add more practical exercises (n=7); "Training materials needed also in print" (n=6); "Bigger, ventilated room for practical exercises" (n=6); "Less is more, use only few themes, but in-depth" (n=4).

All these suggestions were very useful, concrete, and most inspiring for the writer and were taken in use, first in Tallinn University, but later also in courses at Finnish and US universities.

Discussion and Conclusions

Underjudge reliability is recognized as being problematic in perceptual voice schemes (Webb et al., 2004). Kreiman et al. (1993) wrote of the need for reference voices as 'fixed external standards' or 'explicitly anchored paradigms' to avoid the fact that listeners tend to rate voice qualities by using personal internal standards. According to Ilomäki (2008), the condition of voice can be studied from several different perspectives: through self-evaluation, acoustic measurements, clinical-instrumentally or using perceptual evaluation. Thus the understanding about the voice and its condition could be different depending on who is studying the voice and how. More research has been done on how clinicians evaluate the voice, but less data can be found about voice users' self-perceptions (Sellars & Dunnet, 2002; Lee, Drinnan & Carding, 2005). Lee et al. (2005) noticed when comparing patients and clinicians perceptions, that patients evaluated their voice disorders more serious than the clinicians did. This could be interpreted that a novice observer and the expert are using different vocabulary and rating scale while evaluating the voice. Other reason could also be the fact that the voice user does not evaluate the voice based only on the auditory features, but also using the perceptions how the voice usage feels. This could be very different from the expert's evaluation based only on his/her auditory and visual observations. Thirdly, voice users could evaluate their voice also based on how much the voice disorders are already complicating daily working or being involved in their community (Ma & Yiu, 2001; Yiu, 2002; Sukanen et al., 2007). This is important to notice, as in this study both, the participants (referred above as 'novice', 'patient') and the trainer (referred above as 'expert') worked with the same course, trying to establish the same vocabulary.

Concerning the answers to open-ended questionnaire in the second phase of the study, it was interesting that overall the participants had used more time and space to answer

the third question of the questionnaire. Therefore, we can find more themes here with more answers and variety of these, which all in their details served very well as a basis for the development of the study course "Teachers' voice". "Practicality" was the most frequently mentioned theme overall in this question, as well as throughout the whole questionnaire, and four of the eight key themes in this section represent it.

The big influence of the course atmosphere and a trainer on this course in participants' opinions was an interesting fact. Good course structure (n=47) helps the participants to learn. But they raised the positive, energizing and supporting course atmosphere as equal, as well as pointed out in their 80 answers (equally big amount as the other biggest amount of answers in this section: "video analysis", also n=80) the different features of the trainer that helped them (participants) to open up, trust, learn and implement different skills and knowledge in this course. These results inspired the author to write the article about the possibilities to unlocking US teachers' vocal potential by raising awareness about the body-mind-interconnectedness in VoicePilates training (Vainio, 2018b).

Important part of answers to this 3rd question was also *"What I learned?"*, as the participants were eager to point out their learning experiences, although it was not specifically asked in this question, which served also as an important part of developing the course. Participants mentioned the main learning experiences: "Started to perceive my body better" (n=6); "Got new skills for my work, for myself, for children I work with" (n=6); How to use the voice based on aligned posture (n=4); "I am happy that I managed my stage fright, got more courage" (n=4); "Felt in my body where the voice starts" (n=4); "Learned a lot by observing my peers and from their feedback" (n=2) etc.

Based on the author's experience as a long-term voice trainer, these themes (which participants are pointing out here) are actually. Not so easy to learn and identify with these, verbalizing and perceiving bodily sensations of these show that participants have really had some in-depth and 'hands-on' experiences in the course, from several different angles, such as from psychology, as well as how they are experiencing the voice resonance, body awareness, posture alignment and interconnectedness through mind, body, emotions and voice.

A major shortcoming of solely informative voice hygiene lecture, compared to combined voice hygiene lecture and voice training, is its limited capacity to train embodied postural and vocal exercises as well as to facilitate reflection on the affective processes underpinning people's engagement with vocal well-being and recognizing one's vocal strengths and abilities (Vainio, 2018b). The concept of teachers' body awareness has recently received growing attention in research, but despite this interest, embodiment has to date not been systematically connected to teachers' vocal training. More in-depth research is thus needed for studying teachers' voice trainings, their body awareness and voice and resonance perceptions in it for better vocal and voice disorders prevention outcomes.

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Appendix 1

Table 1. Was there something too much, too little

QUESTION 1 - Too much/little	*n*
Themes, time-management	
- All in balance	82
- More time	40
- Very useful	15
- More of everything, so exciting	6
- Group size too big	5
- Longer course	4
- Time flied	3
- More of everything all was new	3
- Can´t say	3
- Better time-management	2
- Time was used in maximum	2
- Too long course	1
- Too intensive	1
- Should be obligatory for teachers	1
- Got more than expected	1
Theory/Practice; individual/Group work	
- Good balance	19
- More practice, less theory	18
- Too many individual work	9
- Less videoing	6
- More time for Natural tendencies/MBTI	5
- Less anatomy and medicine	3
- Excellent individual work	2
- More theory, less practice	1
- Less videos about vocal cords and diseases	1
- More time for voice hygiene	1
- Less exercises connected to singing, more for teaching	1
- Theory explained while training practically	1
- More about connections between voice, anxiety, defense mechanisms	1
- More pre-information	1
- Avoid "come back to it later"	1
- More videoing, analyzing	1
Exercises	
- More speaking and singing voice exercises	9
- More exercises overall	5
- Too many voice exercises	2
- More body perception exercises	2
- Avoid "acting", overdoing in exercises	2
- Concrete morning warm-up exercises	1
- More video training	1
- Less physical exercises	1
- More physical exercises	1
- More voice care exercises	1
- More breathing exercises	1
- More muscle releasing exercises	1
- Concrete exercises for everyone	1
- Good video training	1
- Use feedback time from video training for doing own exercises	1
As a result	
- Interested in pilates	1

-	Work continues with exercises	1
-	Got good overview	1

Table 2. What do you want to know more of

QUESTION 2 - What do you want to know more of		*n*
Theory/themes		
-	Body-mind-soul connection	1
-	Mindfulness	1
-	Stage fright	1
-	Controlling emotions and anxiety in voice	1
-	Voice and self-esteem	1
-	How mental stage affects the body alignment	1
-	The effect of the voice and its tone to listeners, children	1
-	Acting and voice	1
-	Natural tendencies, MBTI	2
-	How to better understand own teaching, learning based on this training	1
-	Anatomy of the voice production	3
-	The hearing	1
-	Voice disorders, reflux, preventing, effect of foods	1
-	Quick tips & tools for voice care	3
-	Personal risks, and different methods for voice care	5
-	Pharmaceutical and natural remedies for voice	3
Organisatory		
-	All was well	45
-	More exploratory, practical trainings and material	19
-	More of everything	15
-	More individual feedback with smaller group	15
-	Can´t say	11
-	Follow-up	5
-	More video/analysis	1
-	After the training to come back some basic theoretical model	1
-	Video program for supporting self-learning	1
Practical voice work		
-	Voice exercises	41
-	More experiential, practical exercises for changing old muscle memories	21
-	Voice exercises, methodology, plays, remedies especially for children	6
-	How to better project the voice	7
-	How to better control the voice	6
-	Exercises for voice cure and care	4
-	Supported singing, hitting "high notes"	5
-	Exercises for clearer voice, to avoid hoarseness, voice trembling, "filling words" as "mm"	3
-	Longer training for "finding one´s own voice"	2
-	How to use the voice in different situations	2
-	Different voice techniques	2
-	How to observe and help others (I´m music teacher)	2
-	Warm-up exercises after waking up	2
-	Warm-up exercises before singing	1
-	Different voice relaxation exercises	1
-	Voice exercises for connecting the head-and chest-voice (to avoid the "break")	1
-	Exercises for better usage of one´s vocal range	1
-	Exercises to make to voice be able to "carry more", more intensive	1

-	How to project the voice for better order in class	1
-	Finnish vocal methodologies	1
Practical body work		
-	Breathing exercises, also for children	10
-	Pilates	8
-	Individual posture and body alignment in speaking	8
-	Alexander technique	6
-	How to release muscle tensions, and implement all learned skills	6
-	Different body alignment techniques, especially for he back	2
-	Yoga	2
-	Voice yoga	1
-	Relaxation and muscle tension releasing exercises	1
-	Massage	1
-	How to use better voice production muscles	1
-	How to get better contact with one´s body	1

Table 3. What did you like most

QUESTION 3 - What did you like most?		*n*
Practicality overall		
-	Practical exercises	54
-	Useful, interesting tips& tools for better voice usage	12
Corporeal Awareness		
-	Physical perceiving of different exercises in one´s own body	13
-	Learning to perceive the voice and body as a whole	2
-	Perceiving how tall I am and could be	1
-	"Opening" the body	1
-	Feeling the body staying open and resonating as a "barrel"	1
-	Very good feeling in the body, instead of felt "closed" as earlier	1
Aligned Posture		
-	Aligned posture in standing and sitting position	19
-	Posture exercises	8
-	Physical exercises for releasing the tensions in posture	7
-	Alexander technique	6
-	Breathing	6
-	Pilates	4
-	Got help with back pain	2
-	Yoga	1
-	Voice production muscles	1
-	Massage	1
-	Body- and voice techniques	1
Balanced Speech		
-	Good amount of voice exercises	13
-	Help with voice endurance	11
-	Theory and anatomy of voice, its production, usage	4
-	how to use the voice properly	3
-	Exercises for lengthening the vowels ("weekday-exercises")	3
-	Pharmaceutical and natral remedies	2
-	Connections between voice and body	2
-	Exercises how to widen your vocal range	2
-	How to use my chest voice	2
-	Knowledge about one´s voice´s real range	2
-	Breathing exercises	1
-	Warm-up exercises	1

-	Rhythm-exercises	1
Simulation exercises		
-	Good amount of presentation skill exercises	2
-	Training the sentence-exercises	1
-	Presenting the poem	1
-	Being proud of to be able to overcome one´s fear of presenting	1
-	Improvisation exercises	1
Video analysis		
-	Video analysis overall	80
-	Videoing own presenting	20
-	Self-analysis through video	3
-	Giving and receiving feedback from peers	2
PSYCHOLOGY		
Reflective Feedback		
-	Individually tailored feedback for everybody	42
-	New info for oneself	4
-	Peer-feedback and very positive learning experience from small groups	4
-	Happy that the trainer had time individually for everybody	3
-	Very useful concrete feedback for one´s body and posture	3
Atmosphere		
-	Positive, optimist, inspiring, activating, energetic, joyful, humorous, free, human, barrier-breaking atmosphere	28
-	Tension-releasing, friendly, nice, trustful atmosphere- the only way to be able to open oneself	24
-	Most useful and interesting trainings I have had	2
-	"The presence" gained by trainer	1
-	Time flied	1
The trainer		
-	Energetic, hard-working	14
-	Emotional, positive	12
-	Charismatic, colourful	11
-	Professional and very competent in own field	11
-	Ability to engage all listeners	11
-	Supporting, inspiring, tactful, sensitive for `nuances´	9
-	Wide knowledge about voice-related matters	5
-	Optimistic, barrier-breaking	4
-	Tension-releasing	2
-	Sometimes too energetic for Estonians, but it was no problem	1

PEDAGOGICAL		
-	Good structure	37
-	Good videos about vocal cords	11
-	Clear presenting, good real-life-based examples, good repetitions	5
-	Practical and active participation, self-reflection and -perception, peer and self-feedback and -analysis	4
-	Should be obligatory for all new teachers	4
-	Good small group size	3
-	Liked the theory	1
-	Good organizing of the course	1
SUGGESTIONS		
-	Nothing, all is well	3
-	MBTI and natural tendencies in more in-depth	2
-	Feedback, suggestions could be in video or audio, not to forget	1
WHAT I LEARNED		
-	Started to perceive own body better	6
-	Got new skills for my work, for yourself, and for children I work with	6
-	Learning how to use the voice based on aligned posture	4
-	Happy that I managed my stage fright and got more courage	4
-	Felt in my body where the voice starts	4
-	Learned a lot by observing my peers and from their feedback	2
-	Have better got to know myself, how to better use the body and voice	2
-	Got a package of exercises for continuous learning	2
-	Got conviction to that it all starts form teachers´ mind and being in balance in oneself	1
-	Thanks to Alexander-technique started to use the body and voice in better ways in everyday life	1
-	Happy that I want now to continue searching for more knowledge in this area	1
-	Learned how to better balance my body	1
-	How to breathe deeply	1

Table 4. Suggestions for the next courses

QUESTION 4 - Suggestions		*n*
Longer course		
-	Longer course	48
-	Follow-up day	7
-	Course not in the end of semester	
All is well		
-	Keep doing the good work	29
-	All is well	9
-	Venue and content good	7
Venue, organization		
-	Bigger, ventilated room for practical exercises	6
-	Better IT technical equipment from venues	2
-	Pre-information about clothing	1
-	Use assistants in bigger groups	1
-	Use outdoor facilities	1
Content, material		
-	Better time-management	8
-	Training materials also in print	6
-	Less is more, use only few themes but in-depth	4

-	Change role-play to reading texts, breathing, word-exercises, or do notably shorter and intensive way	2
-	Reflection in the beginning and the end of the day	1
-	In exercises use different than sitting order to avoid stage fright	1
-	Trainer could show the best outcome for different presentations for the voice, breathing etc.	1
-	How to make the voice more interesting, emphasizing etc.	1
-	Slower tempo with more practicality	1
-	Useful to be able to write down own development points	1
-	Less "good!", more concrete feedback	1
-	Avoid "I´ll come back to it later"	1

Individual work/smaller group size

-	Smaller group size	17
-	More individual work	10

Nothing

-	Nothing to change/improve	36

Practicality

-	Add more practical exercises	7
-	Add more voice exercises with movements	3
-	Train the voice more by doing presentations	1
-	How to control the voice while being angry, nervous	1

Video

-	Video own presenting for further analysis	2
-	More concrete guidelines for presenting and analyzing the video training	2
-	Pre- and post-videoing to notice the difference in the voice	1
-	Always use real-life situations, avoid "acting" in simulations	1
-	Pre-videoing could use some text, not improvised	1

To curricula

-	Should be mandatory to all teachers in pre-and basic education	11
-	For all voice users	4
-	For BA students	3
-	Should be mandatory for pre-school assistants	1
-	Should be mandatory for musicians	1
-	Should be available also for Tartu university	1

Appendix 2

Table 1: How is your voice? Based on answers of Estonian pre-service and university teachers 2004-2005

	Every day		Every week		Not so often		Not at all	
	n	%	*n*	%	*n*	%	*n*	%
Q 1	31	24	23	18	54	41	23	18
Q 2	15	11	42	32	60	45	15	11
Q 3	15	12	29	22	62	48	24	18
Q 4	5	4	5	4	58	44	63	48
Q 5	15	12	15	12	49	38	49	38
Q 6	41	32	23	18	45	35	21	16
Q 7	21	16	17	13	60	45	34	26

Q 1 - Is your voice lower and hoarser in mornings?
Q 2 - Does your voice get often overloaded and tired?
Q 3 - Does your voice get lower and hoarse while speaking?
Q 4 - Does your voice unexpectedly break or is lost completely while speaking?
Q 5 - Do you have difficulties in making yourself heard?
Q 6 - Do you need to clear your throat or cough while speaking?
Q 7 - Does your throat ache, is it tense or feels like something is “stuck in the throat”?

Table 2: “Risks and contributions for voice disorders, part 1”

	Yes		No		Can't say	
	n	%	*n*	%	*n*	%
Q 1	20	17	58	48	43	36
Q 2	68	54	48	38	9	7
Q 3	49	39	56	45	20	16
Q 4	31	26	61	51	27	23
Q 5	42	34	46	37	36	29
Q 6	114	91	4	3	7	6
Q 7	65	51	51	40	11	9
Q 8	59	47	54	43	13	10
Q 9	99	79	19	15	7	6
Q 10	85	69	22	18	17	14

Q 1 - Do you perceive voice fatigue (laryngitis)?
Q 2 - Do you use your voice a lot in your free time?
Q 3 - Do you have any problems in your health condition?
Q 4 - Do you have medical condition that could cause voice problems?
Q 5 - Do you use your voice properly?
Q 6 - Do you need to learn how to use your voice in more effective way?
Q 7 - Are you naturally talkative person, with using loud voice volume?
Q 8 - Do you use quick pace when speaking?
Q 9 - Do you have stage fright before any public speaking?
Q 10 - Do you need to improve or do any changes in your lifestyle?

Table 3: "Risks and contributions for voice disorders, part 2, ´At work´"

	Yes		No		Can't say	
	n	%	*n*	%	*n*	%
Q 1	115	93	6	5	2	2
Q 2	83	67	38	31	3	2
Q 3	25	20	87	71	11	9
Q 4	32	26	82	67	9	7
Q 5	29	23	85	69	10	8
Q 6	63	51	44	35	17	14
Q 7	44	35	66	53	14	11
Q 8	46	37	68	55	10	8
Q 9	47	38	65	53	11	9
Q 10	58	47	52	42	14	11
Q 11	63	51	49	40	11	9
Q 12	49	40	58	48	15	12
Q 13	69	57	42	34	11	9

Q 1 - Do you use your voice a lot during the workday?
Q 2 - Do you need to raise the voice significantly or shout at work due to background noise?
Q 3 - Are your listeners sitting relatively far?
Q 4 - Does your working space has a lot of echo?
Q 5 - Do you have difficulties in making yourself heard?
Q 6 - Does your working space have dry air?
Q 7 - Does your working space have dusty air?
Q 8 - Does your working space have smells?
Q 9 - Does your working space have air pulling/wind?
Q 10 - Are you very overwhelmed with your work?
Q 11 - Are you often exhausted with your work?
Q 12 - Does your working positions prevent you using your voice properly?
Q 13 - Do you have to use your voice in rotated or other positions, like reaching from high, raising the chin and twisting the head?

Table 4: The distribution and mean of the grades from the 19 courses given. Participants were able to give grades from 1 to 5, 1 being lowest and 5 highest.

		Grade			
Course	*n*	3	4	5	mean
#1	30	0	3	27	4,90
#2	18	0	2	16	4,89
#3	13	0	1	12	4,92
#4	13	0	1	12	4,92
#5	3	0	0	3	5,00
#6	21	0	2	19	4,90
#7	6	0	1	5	4,83
#8	11	0	0	11	5,00
#9	13	0	0	13	5,00
#10	14	0	0	14	5,00
#11	7	0	3	4	4,57
#12	7	0	0	7	5,00
#13	15	0	4	11	4,73
#14	3	0	1	2	4,67
#15	21	2	8	11	4,43
#16	12	1	3	8	4,58
#17	14	0	0	14	5,00
#18	11	1	3	7	4,55
#19	7	1	3	3	4,29
Total	239	5	35	199	4,81
		2 %	15 %	83 %	