İDİL

CHANGES IN VOICE AND VOCAL PERFORMANCE OF MOVEMENT-BASED VOICE TRAINING

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Kar, Tuğçem "Changes in Voice and Vocal Performance of Movement-Based Voice Training" idil, 93 (2022 Mayıs): s. 625–634. doi: 10.7816/idil-11-93-01

ABSTRACT

This research was carried out to determine the effects of "Movement Based Voice Traning" on voice training process. Members of the main working group were first recorded with the "Audacity" program and then the voice analysis with the "Praat" voice analysis program. In the second stage, members of the working group received a performance video record with a piano accompanied and pre-performance records were prepared to be presented to the evaluation of a jury of 3 persons. Then, the applications were started and the movement-based voice exercises and the voice training program planned for six weeks were applied to the working group. Applications were determined in the form of classwork as two hour per week for each student and continued for 6 weeks at the same time on the same day. After each study, students in the study group were asked to write their experiences in the student diaries and according to the feedback, the researcher re-planned the next lesson to be better forth he study group. After completion of the applications, members of the working group were re-recorded with the "Audacity" program and "Praat" voice analysis program and re-sound analysis were performed. And again, working group members accompanied by a piano to perform a performance video recordings and post-performance records were prepared to be presented for the evaluation of a jury of 3 people. Voice recordings and voice analysis data taken by -Otorhinolaryngologist and Lecturer Professor Dr. Kürşat Yelken, at his clinic "Voicest" and again evaluated by Professor with the researcher. Performance records were evaluated by the head of the voice education departments of three universities with the help of "Performance Evaluation Form". Research data were obtained by using source screening, action research techniques and analyzed according to descriptive statistical methods, interpreted and suggestions were made.

Keywords: Movement based voice training, body awareness, singing training, kinesthetic voice exercises, voice analysis, vocal performance

Makale Bilgisi:
Geliş: 11 Şubat 2022 *Düzeltme: 24 Mart 2022* *Kabul: 8 Nisan 2022*

Introduction

There are some instinctive and inherent actions that we believe have been given to us by God, such as when the baby comes into the world and fills his lungs with oxygen for the first time, starts breathing, starts crying using his voice, and starts sucking breast milk. Using our voice is one of the first actions we begin to do as soon as we are born. Our natural voice technique is considered the most suitable for our anatomy and therefore the most accurate technique. During the growth process, we can move away from our natural voice due to physical, mental, social and psychological factors. In the process when the mind and body control is not fully gained, the baby's voice is never turned down even if he cries all day, whereas voice disorders are more common in adulthood when our consciousness is developed. In order to preserve or regain our natural voice technique, we need to acquire voice health awareness and bodily awareness. Body awareness methods are an unmissable opportunity to return to nature for professional voice users who perform many professions such as singers, athletes, theater actors and announcers in the world. The present study was conducted to discuss the effects of the individual's awareness of bodily awareness on voice training. The problem of the research is whether singing performance can be improved with the help of bodily awareness and natural movement. Purpose of the research; It is the natural production and use of sound with the help of bodily awareness and bodily movement in voice training, and overcoming the obstacles in voice training with the help of movement-based voice training. Although many researches and applications have been made in the field of voice education, the field of "Motion-Based Voice Education" has been very limitedly addressed. This research is considered to be important in this respect. It is important to predict that the use of bodily awareness methods as movement-based exercises in voice training will have a positive effect on the voice training process and can be an alternative to the image-based course content in voice training. It is thought that the results of the research will inspire educators working in the field of voice education. While the physiological formation of respiration and phonation, vocal organs and vocal muscles, correct posture are taught in vocal education, the theatrical use of the body in stage lessons and the human body and its functioning are taken into the center in song teaching. The most important reason for this is that the instrument of the singers is the human body. For this reason, we can see sound and body together in many works. Schlinger (2006) states in his study "Feldenkrais Method, Alexander Technique, and Body Awareness Therapy in the Performing Arts with Yoga" that each of these techniques expresses a highly developed body of thought and theory and gives stage performers the ability to deepen understanding, maximize function, and at the same time. He stated that it offers ways to perceive and feel their movements to improve ease and balance. Grant (2014), Vocal pedagogy and Feldenkrais method study, on the other hand, explored how a vocal pedagogy based on the development of kinesthetic awareness and movement can improve the learning experience of vocal students. The Feldenkrais method can be used to relate traditional and scientific vocal pedagogical approaches to the sensory experiences of singers learning their craft. Feldenkrais method 'How do I activate my intentions?' raises the fundamental question. This question is important for understanding the perspective the method provides, and it also goes a long way in answering a question that asks how we make the connection between vocal technical concepts and physical coordination. "I dream of a form of musical education where the body becomes an instrument that bridges sound and thought and helps us express our emotions without swindling them." defines its method by saying (www. Dalcrozeusa.org).

Alexander believed that the head, neck and spine relationship is important in ensuring the comfort of the individual. He focused on the position of the head and neck region regarding his own voice problem. (Jain et al., 2004: 815). Feldenkrais has created his own technique by combining the western physiognomy, anatomy, neurology, system theory, the movement series used by infants in the development process, as well as the eastern philosophy of life and his experience in combat sports based on movement (Ergin, 2006). Kristin Linklater is an important educator working in the field of voice production for acting education, who connects body awareness and freedom of voice with her work, which includes the approach of releasing the natural voice (Linklater, 2006). Hilde Langer – Rühl musicians are recognized as pioneers in the field of breath, voice and body studies. In 1974, he established the branch of "Examination and Education of Breath-Voice-Movement Education in terms of Singers and Instrument Players" in Vienna. Romeo Alavi Kia in his work on this subject called "My Voice, Mirror of Myself" Prof. Talking about Langer-Ruhl, he says, "Inspired by yoga and with exercises he developed, he discovered ways to regulate movement and breathing" (Skopal, 2011). "Lessac has studied how coordinating the body and brain can progress with attention and awareness. One must experience physical feeling at the same time

as behavioral feeling. The training focuses on kinesthetic awareness, where the interpreter is expected to feel physically and to produce vocal sounds cognitively by changing habitual behaviors (Stemple et al., 2000: 433).

Method

Action research was chosen as the research method. Action research has a long history; It emerged during the war in Europe and America so that social scientists could find solutions to some problems (Köklü, 2001, 35). Kurt Lewin (social psychologist and educator), one of the founders of the modern social sciences, is considered the originator of the term action research. (Ferrance, 2000). Lewin addressed these (action) research strategies in an article in 1946. In the following periods, the research was developed by social scientists such as Stephan Corey (Mayring, 2000, 39-40).

The choir hall of Marmara University Music Department was chosen as the research environment. Inside the hall, there is a grand piano that is necessary for performing the exercises, a mirror where the study group members can check themselves while doing the exercises, a board with the pictures of the vocal and respiratory organs, chairs for them to sit and a suitable area for the study group members to move freely while doing the dynamic vocal exercises.

Data collection tools "Audacity" sound recording program; "Praat" audio analysis program; student diaries; Performance video recordings

The "Motion Based Voice Training" program was applied to the study group for 6 weeks. After each lesson of the 6-week study program, the study group was asked to write down their experiences during the 2-hour lesson in their own diaries. The notes that the participants transferred to the student diaries were read by the researcher in the evening of each study day. The next lesson was rescheduled in a more efficient way, taking into account the comments, in order to ensure the development of students' vocal and bodily awareness.

To the people in the study group, Ear Nose and Throat Physician Prof. Dr. In the "Voicest" clinic of Kürşat Yelken, pre and post measurements were made in terms of acoustic analysis of the voice with the "Audacity" sound recording program and "Praat" sound analysis program. Thus, with the "Motion-Based Voice Training", data differences in the samples were observed before and after the training, which was planned as 6 weeks. "Audacity" is a sound recording program and sound editor. Voice analyzes were evaluated with the "Praat" voice analysis program. The "Praat" program is purely a laboratory program and gives accurate and clear results. In this study, mean pitch (basic frequency), that is, the number of times the vocal cords hit each other in one second; jitter, ie the change in frequency from each glottic cycle to cycle; Four parameters from the properties of the sound, namely the shimmer, that is, the change in sound intensity from the glottic cycle to the cycle, and the harmonics to noise ratio, the ratio of harmonics to noise, were interpreted statistically. A change in fundamental frequency and jitter value is not expected.

Before and after the application, the members of the study group were told a solo piece and video recordings were taken. Three academicians from the music departments of three universities, who are experts in the field of voice education, agreed to be the performance evaluation jury. The "Performance Evaluation Form" along with the first and last performance videos were hand-delivered to 3 academicians on a disc and they were asked to evaluate 14 students one by one on a 100-point scale in line with certain parameters. Performance video recordings and performance evaluation form have taken their place among data collection tools.

Within the movement-based voice training program, messa di voce exercise, lip trill, portamento exercise, straw exercise, free-range harmony exercise, lantern exercise, ribbon exercise, chair exercise, bottle exercise, wall push-up, volta exercise, vibration exercise, body opposite to the movement of the voice. motion exercise, counting agility exercise. These exercises have been compiled and developed by analyzing the individual lessons of many scientific organizations and academicians in the field of vocal education, and some of them have been named by the author and presented as study content. In general, the exercises serve the natural sound technique created by using the body in the most appropriate way to the anatomy. As a side purpose, these exercises are; It serves to eliminate the handicaps in situations where our mind prevents us from using our body naturally while singing. When our brain focuses on the movements of the body and the movements of the exercise, the impulses and tension

in the regions of the voice and respiratory organs disappear and the sound is naturally produced with the comfort we call the zero point. The natural sound produced with this technique will also be healthy and accurate.

Messa di voce exercise; It is the transfer of a tone as legato from "piano" to "forte", from "forte" to "piano" without changing its timbre. In a held tone, the transition of the voice from "piano" to "forte" occurs as the tension of the vocal cords increases and decreases and the vibration amplitudes change.

Lip Trill ; This exercise cannot be noted. When the teeth are in a closed position, the tongue is flat against the upper palate as in sleeping and resting times, and the lips are in a closed position without being compressed, portamento in the voice from treble to low and the uninterrupted air flow vibrating the lips like the movement of the vocal cord in free edge vibration while performing legato.

Portamento Exercise; In this study, it is expected that not only 12 tones in an octave sound range, but also intermediate tones are shifted from top to bottom, almost like an ambulance siren, to the smallest coma sounds, and the transition of connective tissue function to muscle strength function, that is, high tones are connected to low sounds. The "U" vocal is used until the last sound. In the "A" vocal, the muscle strength function is passed. Exercise is done as slowly as possible and leaving the body relaxed. Again, the arpeggio work, descending from treble to low, is also performed slowly and by sliding. "U", "O", "O", "A" vocals are used. There is also a variation that is made by hanging the body freely from the waist down while going from high to low and slowly rising from the waist to low to high. The treble provides a natural outlet and the pessary provides a natural connection.

Pipette Exercise; In addition, some vocal exercises (done with vowels) were applied to a wide mouthed straw for breath control. Portamento exercises and "U" exercises performed without pursing the lips and without contracting the cheeks were deemed appropriate for this application. In addition, blowing regular bubbles with the same pipette into a 500 ml bottle half filled with water without interrupting your breath will send regular vibrations into the vocal tract, so it will have a massage effect. Bubble removal exercise should be left after all exercises. This app is Dr. It was inspired by İlter Denizoğlu's drvox (see dictionary) practices and is a primitive variation of his work.

Free Roaming Harmony Exercise; During this exercise, the students and the instructor stand in a circle, and with the signal of the instructor, everyone starts to sing the voice they want as legato with the "A" vocal and walk. He goes to the person he is close to and hears the timbre of the voices they give, and if the tone is discordant, he may switch to a more harmonious voice. He then approaches another person and resonates the voices together. This exercise was performed by opera singer and educator Prof. Taken from Yıldız Dağdelen.

Globe Glass Exercise; In this exercise, students sit in their chairs. Then they rest their elbows on their knees and hang their heads down to face their hands. Meanwhile, the instructor asks the students to think of their heads as a bell jar—half-filled with water with an orange fish in it. While giving the "KİİYEYAOU" sounds in order, the head is asked to be turned very heavily from left to right and then from right to left. It should be so slow that while the water inside our head, which we imagine as a fish bowl, remains stable without trembling, only the bowl will be thought of as turning left and right. This exercise was done by the researcher's voice trainer, Prof. Taken from Şebnem Ünal.

Ribbon Exercise; A four-finger-width satin ribbon is tied around the sternum from where the student's sternum ends. While breathing, the student is asked to open this satin ribbon by expanding the rib cage. And while exhaling, it is expected to maintain the width of the rib cage so that the ribbon does not slide down. This study is also important for breath control. This exercise was taken from opera singer and educator Ayşe Sezerman, who was a practitioner during her masterclass at Marmara University.

Chair Exercise; The chair carried by the student should be made of a light material. While holding the chair with the arms parallel to the ground, the abdominal muscles, namely the abdomen, are actively working. We cannot apply force to two points on our body at the same time. Therefore, while carrying a chair, we prevent the contraction of the vocal and respiratory organs. However, the duration of this exercise should be kept short in order not to cause injury to the arms. It has been observed that it is an exercise that gives results in a short time, especially in the samples that may have pathological disturbances in the voice because of this reason, the voice is compressed and self-squeezing. David Gowland had opera singers perform this exercise during a masterclass he held at Istanbul

Technical University. David Gowland is Artistic Director of the Jette Parker Young Artists Program. Since its establishment in 2000, he has been assigned to the "Royal Opera House Young Artists Program".

Bottle Exercise; The student is given two 500 ml bottles and asked to shake them diagonally. It is important that the arms are released from the shoulders in a relaxed, uncontrolled and non-forced manner. In this way, the mind of the student, who shakes his arms like a metronome, focuses on the swing of his arms, not on the vocal organs. It is thought that this situation provides comfort and naturalness in singing. The exercise emerged during the researcher's individual voice training studies.

Wall Push-up; There should be one step distance between the wall and the student's body. In one of the triads in the exercise, the student accelerates his body weight back with his hands at the last moment, as if he is going to fall against the wall. In the other of the trilogies, he pushes his body off the wall to reach a natural stance, while dangling his hands down. This continues until the end of the exercise. In this exercise, it is aimed to transfer the stress and tension in the body to the wall through the hands and to reach the so-called "zero point" position that we have while sleeping. The exercise emerged during the researcher's individual voice training studies.

Volta Exercise; The student is asked to walk five steps while doing the exercise. Then he stops and turns where he hears the chord, and again sings the exercise while walking five paces. This exercise is done by walking 5 steps forward. During the natural walk, it is desired that the natural oscillation continues as our arms sway. Thanks to the movement of the body, the agility in this active exercise is easily adopted by the student. The exercise emerged during the researcher's individual voice training studies.

Vibration Exercise – Shaking Hands; The aim is to use the natural vibration of the sound in learning the vibration technique. When it comes to the last note in the exercise, the arms are spread out to the side and flapped from the wrists like a bird's wings. Vibration is five sound changes per second. For this reason, it is thought that a clearer and more beautiful vibration will be obtained if the hands are moved from top to bottom five times while clapping. This exercise by Prof. It is a kinetic exercise that Güzin Gürel used during her voice training lessons and belongs to her.

Body Movement Against Voice Movement Exercise; In the exercise, the notes moved from low to high treble. Here, the body is in a squat position when the voice goes to high; It is recommended to switch the body to natural posture even when the voice is low. In this way, the student does not rise on his fingertips with the prejudice that the high-pitched voices are above, but it is also thought to be a useful exercise for intonation. Also, when the exercise moves from low to high and the student reaches high pitch, he stretches his arms out to the side. In this way, it helps the diaphragm muscle by expanding the rib cage and creates a larger space for respiration into the lungs. The exercise emerged during the researcher's individual voice training studies.

Musical Agitation Exercise by Counting in Place; This exercise can be used to get support from body movement in all fast passages. It occurs with body movement, as if running, but with the toes of the feet always on the ground. In this way, the energy of the body is transferred to the passage, and at the same time, it is thought that the body relaxes within the flexibility of the movement. At the same time, holding both hands with the palms facing the chest and moving them quickly will also help with agitation. The exercise emerged during the researcher's individual voice training studies.

Results

The written feedbacks of the study group students are as follows

A.B.; He stated that he enjoyed doing motion-based vocal exercises during and after the research, at school and at home.

A.D.N; As the weeks progressed, she said that she noticed that her voice became less tired thanks to the vocal exercises included in the study.

F.O; He stated that his body was relaxed thanks to the vocal exercises included in the study and this comfort was reflected in his voice.

G.Y1; He stated that he moved away from the thoughts that negatively affected his singing during the working process, that he was psychologically affected positively by his body movements, and that he felt that he did not imitate while singing.

G.Y2; He stated that he used his body and voice more effectively, that his face and neck muscles were relaxed, and that he felt distinctly that his voice came out in the most natural way possible.

H.H.S; He said that he initially hesitated while doing these exercises, that he thought he would not gain any benefit through these movements, that he tensed himself, but then he was able to give finer sounds easily when he left his body alone and did not tighten his facial muscles.

İ.O; He stated that by using his body correctly and continuing to breathe naturally, he reached the comfort of not contracting his body while singing.

N.K; He stated that he realized that the air should increase when going from piano to forte and that air should decrease when going from forte to piano, thanks to the "messa di voce" exercise.

N.T; She stated that thanks to these studies, she now feels more confident while singing.

O.G; He stated that he realized the mistakes that he knew right thanks to the posture study, and that he learned to stand upright in this study.

ARROW; He stated that he realized the necessity of using his body correctly in order to use his voice correctly, naturally and healthily.

Ş.Y; He stated that he learned many things that he did not know, from how breathing takes place, to the formation of sound, to the use of correct posture. He stated that with the "Messa di voce" exercise, he realized that no matter how much air he gives to each tone, his voice would not crack, that his shoulders were more relaxed and he could sing more easily thanks to the bottle exercise, that positive changes in the vibration of his voice were observed thanks to the hand clapping exercise, but he had difficulty in the chair exercise.

N.S; He stated that he believed that he could sing better with body awareness and would use this in his next life.

A.Y; He stated that he was positively affected by the vocal exercises included in the study and he used his voice more comfortably.

The results of "Computerized Voice Analysis" are as follows

In the “Voicest” voice clinic, pre and post measurements were made in terms of acoustic analysis of the voice with the “Audacity” sound recording program and “Praat” sound analysis program, so that the “Voice Training with Dynamic Voice Exercises” was carried out in the samples for 6 weeks. data differences were observed. In this study, mean pitch (basic frequency), that is, the number of times the vocal cords hit each other in one second; jitter, ie the change in frequency from each glottic cycle to cycle; Four parameters from the properties of the sound, namely the shimmer, that is, the change in sound intensity from the glottic cycle to the cycle, and the harmonics to noise ratio, the ratio of harmonics to noise, were interpreted statistically. The members of the study group were asked to give 3 voices in the chest, middle, head register (or what they said as falsetto) determined by the researcher according to the voice types, and a voice left to the student as a speaking tone. These four voices were recorded and analyzed in the same clinic under the same conditions before and after the study. No change is expected in fundamental frequency and jitter values. As a matter of fact, similar results are observed. When a comparison is made, when we decide that there is a statistically significant difference, the amount of possible error we will make is the "P" value. If the "p" value is less than 0.05 as a result of the test, it means that there are significant differences in the comparison result. As we did not expect a difference in fundamental frequency and jitter parameters, the lack of statistically large changes indicates that the application did not give a bad result, anyway, the "p" value in these parameters is greater than 0.05, so it was not found significant. Shimmer and HNR to noise ratio parameters were found to be less than 0.05, thus indicating statistically significant differences in these results. Here, it was observed that there was an increase in the shimmer parameter, that is, the change in sound intensity from glottic cycle to cycle; A decrease was observed in the HNR to noise ratio parameter, that is, the ratio of harmonics to noise.

Table 1. Table Showing Fundamental Frequency Values

FUNDAMENTAL FREQUENCY (FO) Hz								
	CHEST		**MIDDLE**		**FALSET/HEAD**		**SPEECH**	
	fo	SE	fo	SE	fo	SE	fo	SE
PRE	146,403	24,331376	237,07015	27,316449	352,88992	27,6973	143,36477	12,519409
POST	133,31569	15,911409	234,29431	27,840431	327,30962	11,41045	161,83523	18,537832

The Base Frequency value is 146,403 in the chest register and then 133,31569, in the middle register it is 237.07015 and then it is 234,29431, in the head register or falset tone it is 352.88992 and then 327,30962, in the speech register it is 143,36477 while it was later found to be 161,83523.

Table 2. Table Showing Jitter Values

JITTER								
	CHEST		**MIDDLE**		**FALSET/HEAD**		**SPEECH**	
	jitter	SE	jitter	SE	jitter	SE	jitter	SE
PRE	0,40508	0,039528	0,25585	0,041332	0,30492	0,071447	0,39469	0,040346
POST	0,41069	0,065025	0,31546	0,052489	0,22915	0,021748	0,35323	0,065446

The jitter value is 0.40508 in the chest register and then 0.41069, in the middle register it is 0.25585 and then 0.31546, in the head register or falset tone it is 0.30492 and then 0.22915, in the speech register it is 0, While it was 39469, it was found to be 0.35323 afterward.

Table 3. Table Showing Shimmer Values

SHIMMER								
	CHEST		**MIDDLE**		**FALSET/HEAD**		**SPEECH**	
	shimmer	SE	shimmer	SE	shimmer	SE	shimmer	SE
PRE	3,27392	0,446306	1,85162	0,267489	1,78123	0,233789	3,198	0,487346
POST	7,074	0,657044	4,96585	0,568114	4,84154	0,628175	5,53223	0,545807
p	0		0		0,001		0,003	

The shimmer value in the chest register was 3.27392 before then 7.074, in the middle register it was 1.85162 and then 4.96585, in the head register or falset tone it was 1.78123 and then 4.84154, in the speech register it was 3.198 and then 5 It was found to be ,53223.

Table 4. Table Showing HNR to Noise Ratio Values

HNR TO NOISE RATIO								
	CHEST		**MIDDLE**		**FALSET/HEAD**		**SPEECH**	
	harmonicity	SE	harmonicity	SE	harmonicity	SE	harmonicity	SE
PRE	21,48915	0,998121	25,57023	0,919566	28,81231	0,962346	21,38915	0,842465
POST	14,28938	0,638415	19,066062	0,713212	21,197	0,897829	16,36654	0,713022
p	0		0		0		0,001	

The harmonicity value in the chest register was first 21,48915 and then 14.28938, in the middle register it was 25,57023 and then 19,066062, in the head register or falset tone it was 28,81231 before and then 21,197, in the speech register it was first 21,38915 Afterwards, it was found to be 16,36654.

Performance evaluation results are as follows

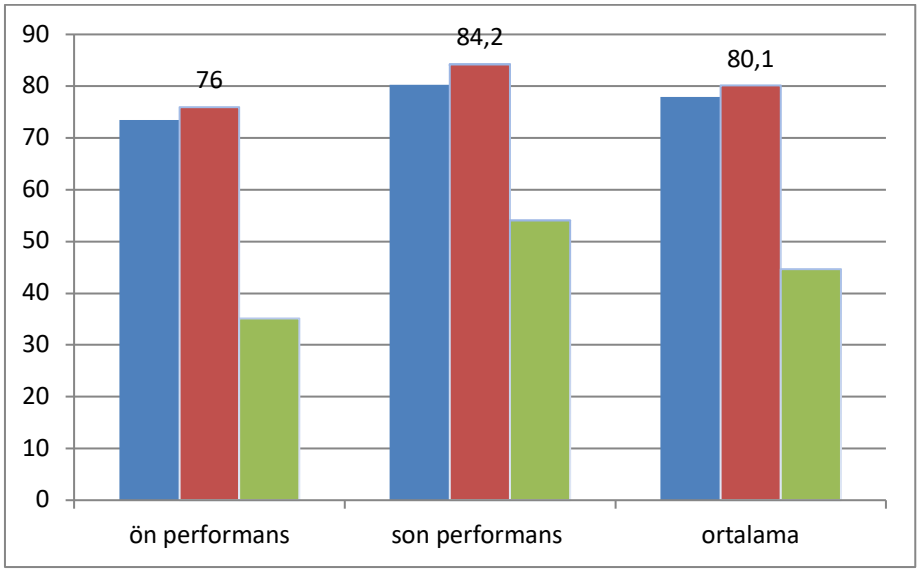
When the averages of the study group in terms of proficiency parameters for action research and post-singing are examined; "musical quality" parameter averages increased from 64.6 points to 73.8 points, "technical" parameter averages increased from 63.4 points to 76.8 points, "using breathing correctly" parameter averages increased from 63 points to 76.2 points, "physical" parameter averages increased from 63 points to 76.2 points. It is also possible to see that the grade point averages of the "using correctly" parameter increased from 62.7 points to 75.7 points, and that the grade point averages of the "legato singing" parameter increased from 64.4 points to 74 points.

Table 5. Table Singing Before and After Action Research Proficiency Score Averages

Singing Before and After Action Research Proficiency Score Averages		PRE	POST
1.	Musical	64,6	73,8
2.	Technic	63,4	76,8
3.	Using breath correctly	63,0	76,2
4.	Using body correctly	62,7	75,7
5.	Singing legato	64,4	74,0

While the average grade given by the number one jury member in the performance evaluations of 14 students increased from 73.5 to 80.3; The average grade given by the jury number two in the performance evaluations of 14 students increased from 81.7 to 90.7; The average grade given by the jury number three in the performance evaluations of 14 students increased from 35.1 to 54.1. Accordingly, an increase of 6.8% in the evaluations of the number one jury; a 9% increase in the ratings of jury number two; It was determined that there was a 19% increase in the evaluations of the jury number three. The increase in general averages indicates 11.6%.

Table 6. Table Pre and Post Performance Grade Avarages



The values we see in blue show the evaluations of the jury member of the Istanbul University State Conservatory, the values we see in red show the evaluations of the jury member of the Marmara University Atatürk Education Faculty, and the values we see in green show the evaluations of the jury member of the Istanbul Technical University Turkish Music State Conservatory.

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HAREKETE DAYALI SES EĞİTİMİNİN SES VE VOKAL PERFORMANSTA YARATTIĞI DEĞİŞİMLER

Tuğçem Kar

ÖZ

Bu araştırma, "Devinime Dayalı Ses Eğitimi"nin ses eğitimi sürecine olan etkilerini belirlemek amacıyla yapılmıştır. Çalışma grubunun üyelerinin ilk olarak "Audacity" programı ile ses kayıtları alınmış ve ardından "Praat" ses analiz programı ile ses analizleri yapılmıştır. İkinci aşamada çalışma grubu üyelerine piyano eşliğinde bir eser söyletilerek performans video kayıtları alınmış ve pre[1] performans kayıtlarının 3 kişilik bir jürinin değerlendirmesine sunulmak üzere hazırlanması sağlanmıştır. Ardından uygulamalara başlanmış ve altı hafta için planlanan harekete dayalı ses egzersizleri ile ses eğitim programı çalışma grubuna uygulanmıştır. Uygulamalar her öğrenci için haftada 2 saat toplu uygulama olarak belirlenmiş ve aynı gün, aynı saatte 6 hafta boyunca sürdürülmüştür. Her çalışma sonrasında çalışma grubundaki öğrencilerin, öğrenci günlüklerine deneyimlerini yazmaları istenmiş ve gelen dönütlere göre araştırmacı bir sonraki dersi, çalışma grubu için daha iyi olacak şekilde tekrar planlamıştır. Uygulamaların tamamlanmasının ardından çalışma grubunun üyelerinin "Audacity" programı ile tekrar ses kayıtları alınmış ve "Praat" ses analiz programı ile tekrar ses analizleri yapılmıştır. Yine çalışma grubu üyelerine piyano eşliğinde aynı eser söyletilerek tekrar performans video kayıtları alınmış ve post[2] performans kayıtlarının 3 kişilik bir jürinin değerlendirmesine sunulmak üzere hazırlanmıştır. Ses kayıtları ve ses analizleri verileri, Kulak Burun Boğaz Hekimi Prof. Dr. Kürşat Yelken'in özel kliniği olan "Voicest" klinikte alınmış ve yine kendisi tarafından araştırmacı ile birlikte değerlendirilmiştir. Performans kayıtları üç üniversitenin ses eğitimi bölüm başkanları tarafından "Performans Değerlendirme Formu" yardımıyla değerlendirilmiştir. Araştırma verileri kaynak tarama, eylem araştırması teknikleri ile elde edilerek, betimsel istatistik yöntemlerine göre çözümlenmiş, yorumlanmış ve öneriler getirilmiştir.

Anahtar Kelimeler: Harekete dayalı ses eğitimi, bedensel farkındalık, şan eğitimi, devinimsel ses egzersizleri, ses analizi, vokal performans