Exercising – Breathing – Performing

Ilse Middendorf’s breathing exercises in context of stage fright

Written reflection within the degree project
The sounding part consists of the following recording: Ludwig van Beethoven, Sonata for Cello and Piano No. 5 in D major
Abstract

This master project addresses the problem of stage fright in a musical performance context. To meet my personal, uncomfortable feelings of stage fright, I decided to “prepare” my body for such situations by doing breathing exercises developed by Ilse Middendorf (The Perceptible Breath). With help and support of the Berliner Centrum für Musikermedizin at the Charité the project became a pilot study about how Ilse Middendorf's breathing exercises could minimize bodily stress of a non-wind instrument player in a stress situation.

Following method was applied. I did breathing exercises over a period of six weeks. I made three recordings of the same cello piece that I know well (Josef Haydn’s Cello Concerto in D-major, 1. movement, exposition): before the six-week period, in the middle of it and at the end. The recordings represent the stress situations. The impact of breathing exercises on my cello practice and recordings were evaluated in three ways. I documented my subjective perceptions of my personal development with a questionnaire and a report. The objective results were then documented in two ways. The three recordings were sent out to professional audience members who did not know in which order recordings were done. They listened and rated them in order of their quality. Finally, I measured a series of body parameters which indicate the level of stage fright (e.g. heart rate, finger temperature, blood pressure) before and after the recordings.

The results of my project are quite encouraging. On the subjective level, I felt less stress, more musicality and a new body awareness. The recordings were rated by audience members in exactly the order in which I recorded them which indicates a musical quality improvement. The body measurements showed that breathing exercises lead to a decrease in bodily stress symptoms (blood pressure and heart rate).
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1. Introduction and method

I have been interested in the topic of musicians’ health since I started my Bachelor studies at the University of the Arts in Berlin. The university collaborates with the Kurt-Singer-Institute, which is committed to ensuring that students can meet the high standards of the musical study and reach a professional future free of pain. I myself took courses about preventing pain and muscle problems. During those courses, I got to know body exercises which are aimed at improving the situation in the practicing room. Of course, this also affect rehearsals, performances and concerts.

Later, during my academic period (Akademiezeit) at the Staatsoper in Nuremberg, I got in contact with breathing exercises in a course on how to handle orchestral auditions. After this experience, I was always conscious about breathing in this context and that it may play a big role in making music also for not wind-instrument players. Breathing is what unites all living beings. It affects our muscles and therefore our posture. So, breathing should play a big role for each musician. But how to approach breathing, once we are aware of its importance? I tried to be aware of my breathing while playing scales, I tried to sing phrases and then play them with the same in- and exhaling. But it felt like groping in the fog. I realized that I stopped breathing in technically difficult passages or that my breathing was loudly hearable, especially when I played chords. This kind of breathing can’t be helpful if you are stressed and your body is tense anyway. So, I started to ask myself which role breathing actually has – especially in stress situations. I was looking for a way to treat or to train my body to feel comfortable so that stage fright would support my playing on stage with its energy and not block and impair my playing.

I wanted to take the chance of this master project to deal with the subject of breathing, to make experiences with it and meet it in a planned and structured way. First, I didn’t know which breathing method could be applicable for this project. I knew that there were different breathing
techniques in yoga, as well as in meditation. So, I’m very thankful that I could get in touch with Ms. Gabriele Rotter, MD, from the Berliner Centrum für Musikermedizin (BCMM) of the Charité Hospital who advised me and helped me in developing this project so that it became what it is. She recommended me to try out breathing exercises developed by Ilse Middendorf. I started to read Ilse Middendorf’s book The Perceptible Breath and became curious to apply her methods. Could these breathing exercises be an effective tool for reducing stage fright? Could I, in this way, prepare my body by breathing exercises in the same way I prepare a piece by exercising and rehearsing it, so that I am able to exhibit stage presence and play with a big, deep and clear sound which I have in the practicing room?

I decided to put my focus on the breathing techniques developed by Ilse Middendorf over a certain period of time and to document all my experiences, my artistic research, my feelings and if I actually manage to bring the experience of those exercises into my playing on the cello. That is the first part of my method. I documented my subjective perceptions of my personal development with a questionnaire and a report. Moreover, as the project evolved into something like a study project regarding the breathing’s influence on playing the cello, I decided to complement my subjective perceptions with objectively measured data. I did three recordings of Josef Haydn’s Cello Concerto in D-major (exposition of the first movement) – one before, one during and one after the period of my breathing exercises. When it comes to the method, this empirical part was evaluated in two ways.

First, the recordings were submitted to three professional cellists who did not know which one was the first and the last one, and they had to rate the recordings according to their musical quality by following a questionnaire provided by Ms. Gabriele Rotter, MD.

Second, I decided to collect some medical data about the effects of the breathing exercises on my body in normal conditions as well as in context of stage fright. Here, by stage fright I mean my mood before and during the
three recordings. I measured the blood pressure, the pulse, the oxygen in my blood and the finger temperature both 30 minutes, 15 minutes and 5 minutes before each recording and then, I did the same measurements immediately after each recording (and then 15 and 30 minutes later). I carried out the same measuring procedures before and after each breathing session. The measuring was something like a medical diary book which describes the breathing exercises’ influence on my body in two different contexts. Moreover, measuring would allow a comparison between perceived effects of stage fright and those that can be objectively measured in my body. I have namely found out that research studies report a discrepancy between a musician’s feelings and the actual body parameters¹.

As far as I could find out, there are no earlier studies about Ilse Middendorf’s breathing exercises in context of stage fright. So, the final results of my little study-project were not expected and provide first insights in this activity. Not knowing which results and experiences I would obtain at the end of my project, made this study period exciting, informative and fulfilling.

The master project has following structure: I start with a short overview and definitions of stage fright based on research literature. Then, I explore the importance of breath in a musical context and present the breathing methods and exercises developed by Ilse Middendorf. In the chapter number four, I present the empirical part of my project. This is the main-chapter of my work and contains both my research methods, results, analysis and discussion of my findings. First, I present the breathing exercises and describe my personal development during the period of six weeks of breathing exercises. Second, I describe the three recordings I have done and my personal feelings about them. Then, I present and discuss the measurements of different body parameters. Third, I present my two questionnaires – one for my mental state during the practical part of my

work and one for the audience of the recordings and discuss briefly the results of my findings. The last chapter includes my conclusion and a reflection over the project as a whole.

I want to thank again Gabriele Rotter, MD, for her detailed and unhesitant support, which was absolutely unique and not expected. I want to express my gratitude to Prof. Björn Dirk Krapohl, MD, who provided me with the medical measuring equipment and who helped me to evaluate all the medical data – a kind of support that should not be taken for granted! I also want to thank Hiltrud Lampe who was my instructor of breathing exercises in the spirit of Ilse Middendorf. A big thank also goes to Jakob Koranyi, Eva Freitag and Kati Raitinen – three professional cellists – who constituted the audience of my three recordings and whose evaluations contributed to the objective side of the project.

2. Stage fright

2.1 Stage fright vs performance anxiety

Personally, when I thought about the terms stage fright and performance anxiety, I would have said that performance anxiety is a stronger and worse form of stage fright. I always thought that symptoms which I experience in a concert or when I play in front of people were typical characteristics of stage fright (shallow breath, cold hands, tremor, fear of blackout, etc.). The more I read about this subject for my master project the more I got the feeling that those symptoms should be categorized as forms of performance anxiety.

In fact – and this is problematic for the scientific framework – it seems that both terms (stage fright and performance anxiety) are used interchangeably
in different contexts. Therefore, it is not clear what exactly they define. This again means that the criteria to diagnose performance anxiety (as an illness) are not given and more research is required in this field of music medicine.

Anyway, I will use those two terms in my work as synonyms and one does not have a stronger meaning than the other.

2.2 Definition and background information

As I already mentioned, there is no exact definition of stage fright or performance anxiety and scientists have different approaches to the subject. There are opinions that stage fright is a subtype of the “social anxiety disorder”, other experts regard it as a “specific phobia”. However, typical symptoms of these conditions are palpitations, tremor, perspiration and self-doubts.

If you search for the meaning of “stage fright” in a dictionary you get an answer like: “[stage fright is a] strong nervous excitement, fear and inner tension immediately before a situation in which one has to prove oneself, especially before a public performance, an exam or similar”. In general, fear is a part of the genetic equipment all human beings have and not something individual, that means it is not a personal and conscious decision...

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3 Fernholz et al, 18.
4 Fernholz et al, 1.
5 ibid., 1.
of an individual. Seen physiologically, stage fright is anyway a kind of fear. There is no single answer to the question where stage fright or performance anxiety exactly originate from. If one follows the “biopsychosocial model”, there are biological, psychological and social factors which influence stage fright. In a certain way, fear is still individual – maybe not in its biological and evolutionary character but in any case in its personal manifestations.

Fear or anxiety on their own are absolutely natural because of necessity of self-preservation: it is a response to a perceived threat called the fight-or-flight response which is a remnant from the early stages of human development. It means that fear leads to two types of behavior: fleeing or attacking. Surprisingly, the effects of fear can be seen positively because they enable a certain energy and concentration. In this perspective, stage fright could be seen positively as well. But in the context of a musical performance, the physical reactions to fear can be a problem: our body can’t make a difference between different kinds of danger and reacts in the same way. Same adrenaline comes into the blood wherever you have to run or fight for your life. Unfortunately, fast heartbeat, shaking knees and arms are counterproductive when playing an instrument. “When we suffer from our stage fright, it is usually because the anxiety component takes over, paralyzing and rendering us helpless and we lose control over ourselves”. So, stage fright in its origin is something positive but performers usually experience it as a negative phenomenon. This has to do with – as I already said – the physical reactions on anxiety which do not match with playing an instrument. Music performance requires fine motoric skills as well as a working memory and an open communication with the audience.

8 ibid., 17.
9 Fernholz et al, 2.
11 Spahn, Lampenfieber, 24.
12 Klickstein, The musician’s way, 135.
13 Spahn, Lampenfieber, 24.
14 ibid., 23.
So, musicians who suffer from stage fright have to struggle with its effects. The first step in this process is to face the problem. Then, “the goal should be to channel stage fright in such an optimal way that it improves our stage presence and concentration”\textsuperscript{15}.

Stage fright or performance anxiety is actually the most common disease of professional musicians\textsuperscript{16}. “The prevalence rate is estimated between 15\% and 25\%”\textsuperscript{17} - that means around 1/4 of all professional musicians are concerned. Researchers in music medical studies found out that more younger than older (“older” means over 45-50 years) performers suffer of stage fright and women are more afflicted than men\textsuperscript{18}. Not all musicians face their problems and search for help although psychical disturbances often have comorbiditiy\textsuperscript{19}. Those who do search for help, notice that stage fright is a condition that can be worked on and which you can influence and change positively. The best researched and successful treatments in music medicine are cognitive behavioral therapy and beta-blockers\textsuperscript{20}. Relaxation techniques were not that successful in medical studies, whereas studies with deep breathing show an effectiveness of 41\% to 79\%\textsuperscript{21}.

\subsection*{2.3 Types of stage fright}

There are different methods to combat stage fright, as mentioned in the previous chapter. Which method is considered to be most effective also depends on the nature of the stage fright. Beta-blockers, for example, counteract physiological effects like fast heart beat or tremor but not

\begin{thebibliography}{9}
\bibitem{15} ibid., 7.  
\bibitem{16} Fernholz et al, 1.  
\bibitem{17} ibid., 1.  
\bibitem{18} ibid., 1.  
\bibitem{19} ibid., 1.  
\bibitem{20} Fernholz et al, 1.  
\bibitem{21} ibid., 15.  
\end{thebibliography}
psychological effects like fear or negative cognition. It means that stage fright is not just stage fright. There are different areas that performance anxiety can impair: the musician’s body, thoughts, behavior and emotions. Each area reacts differently to stage fright. The body prepares – as I already wrote earlier – to fight or to flee, the emotional domain reacts by intensifying all feelings and emotions and the thinking changes, so that all thoughts become negative. No musician experiences only one of these kinds of stage fright – the borders are fluid. So, stage fright appears in many different and individual variations. They enable or cause different reactions, depending on the human being who experiences stage fright.

Moreover, “anxiety can disturb a musician’s body, mind, emotions and behavior [in three phases]: before a performance, during and/or after a performance.”

The first phase contains so called preperformance effects like avoiding or obsessively practicing, so that “a concert’s significance [is] blown out of proportion.” The second phase with the at-performance effects contains the fight-or-flight response: “mental, behavioral and emotional effects include confusion, agitation and fear – especially fear of embarrassment – and these set the stage for memory lapses and negative self-talk.” This again has physical effects like cold hands, trembling or racing heartbeat. The third and the last phase with the so called postperformance effects includes thoughts that you are hopelessly bad instead of thinking that there is a way to develop and to improve you performance. A depression can

22 ibid., 17.
23 Spahn, Lampenfieber, 12.
24 ibid., 17f.
25 ibid., 19.
26 Klickstein, The musician’s way, 136.
27 ibid., 137ff.
28 Klickstein, The musician’s way, 136.
29 ibid., 137.
30 ibid., 138.
31 ibid., 138.
arise. If the postperformance effects then mix with preperformance effects, it may lead to chronic anxiety.\(^{32}\)

In all three phases, there is a risk of a self-enforcing process because one’s own attention always focuses on effects that stage fright risks to produce — tremor, racing heartbeat, blackout, etc.\(^{33}\). And yet, perception and actual data do not fit together. Research shows that one’s own experience and perception of stage fright do not match measured physical reactions.\(^{34}\) So, a musician can feel a strong fear but his/her heartbeat and high blood pressure remain quite normal or the other way round. This suggests “that the same physiological states are perceived as differently threatening.”\(^{35}\)

Influences that produce the negative effects of stage fright can come from outside and/or from inside. Internal factors are personality, character, sex and age.\(^{36}\) When it comes to personality, for example, if a person “is trapped in his/ her [negative projections], […] his/ her ability to act, his/ her spontaneity, and creativity in performing are limited”\(^{37}\). External factors are to be found in the society. Our modern society is a meritocracy which leads to low self-tolerance and high pressure because of constant expectations of achievement and perfectionism.\(^{38}\) This is a base for uncertainty in general because people are afraid to lag behind. This again is the perfect base for performance anxiety.\(^{39}\)

All that I have mentioned so far are typical reasons for stage fright, but it always has its personal and individual effects, depending on the human being who experiences it. Anyhow, there is a rule that applies to everyone: “Musicians who don’t offset their restlessness habitually feed their

\(^{32}\) ibid., 139.
\(^{33}\) Spahn, Lampenfieber, 30.
\(^{34}\) ibid., 32.
\(^{35}\) ibid., 32.
\(^{36}\) ibid., 38.
\(^{37}\) ibid., 44.
\(^{38}\) Spahn, Lampenfieber, 35.
\(^{39}\) ibid., 36.
anxieties”⁴⁰. So, it is very important to find out where the roots of stage fright originate from. Are there personal reasons because one is generally more shy and anxious and nervousness and stage fright form a habit⁴¹? Is it rather a task-related reason because the repertoire is (too) difficult or the preparation time was not sufficient⁴²? A third reason could be – according to the psychologist Glenn Wilson – a situational reason like delay, unfriendly colleagues or concerns about the outcome of a performance (when the outcome may affect your future professional life)⁴³.

As I already stated in the introduction, I will examine the personal reasons of stage fright in my project and will try to find out if I can combat my personal negative effects of stage fright by doing regular breathing exercises over a period of six weeks.

### 3. The breath

#### 3.1 About the breathing in a musical context

Breathing is one of the most central features we human beings have in common. Breathing is natural. It should mean that breathing also plays an important role for those musicians who don’t need their breath to make their instrument sound. Nevertheless, breathing does not play an important role or even any role at all in the instrumental pedagogy for not-wind instruments, at least when it comes to my experience and background. But also in general, techniques and interpretation are in the foreground of a musician’s training and “the body only becomes an issue when something does not

⁴⁰ Klickstein, *The musician’s way*, 139f.
⁴¹ ibid., 140f.
⁴² ibid., 141.
⁴³ ibid., 141f.
work”. Clearly, this is a mistake! Breathing is natural, as I already wrote, and one could conclude that unconstrained and harmonious breathing makes the playing on an instrument natural, too. Maybe, there is nothing to criticize if someone doesn’t play and breathe naturally because everything is played correctly. But the outcome often sounds more constrained and less touching. It is the breathing that enables a “lively, organic and energetic music making”45. All musical parameters are connected to the breath – the sound, the colour of the tone, the rhythm, the length of a piece, etc. This means that the musically expressive breath and the physiologically necessary breath are intertwined: it is possible to make music in a lively and expressive way, but you have to become aware of the musical breath46.

This point of view may be contradicted because there are definitely musicians who play beautifully and expressively but are not aware of their breathing. Their connection between body and instrument is so natural that they don’t have to be aware of it. However, the breath is something like a bridge between the body – which may be called “the primary instrument of the music”47 – and the instrument itself. Movement, tension, posture, concentration, energy and emotional constitution are related to the breathing48. This leads to the logical conclusion that awareness about the breath enables a better and more intense exercising and music playing as well as a better connection to the instrument. Actually, playing music includes two tasks: “being aware of the piece that is to be interpreted and being aware of the body which provides the conditions for that”49. I don’t know if I’m a single case, but my personal opinion is that the second task is not (often) mentioned in musical education for non-wind instrument players. Though, it seems very reasonable that “music breathes and lives the same

45 ibid., 10.
46 ibid., 10.
47 Rüdiger, Der musikalische Atem, 11.
48 ibid., 11.
49 ibid., 12.
way as man breathes”. But how does it work? Is it possible to want to breathe naturally? According to Wolfgang Rüdiger,

A fundamental structural relationship between breath and music, however, consists of the fact that both can take place unconsciously and consciously at the same time – [they can be] vegetative-“automatic” and involuntary on the one hand, arbitrarily controllable and willingly influenceable on the other hand.

Breathing is natural and in the philosophy of Ilse Middendorf, it has much more quality if we don’t control it. Also for Rüdiger, reflecting upon the breath is just the first step. Then, the breathing has to come naturally again. I will further introduce the ideas about breathing methods in the chapter “The Perceptible Breath by Ilse Middendorf”.

Moreover, the breathing itself has musical qualities – apart from the breathing’s role as the essential bridge between the human body and the musical instrument. Breathing is tension and relaxation, coming and going; breathing has a certain length, a dynamic, a rhythm, a frequency and deepness. Same applies to music.

Obviously, breathing is a basic requirement for making music. Breathing may be an object of reflection, when “the self-evident is no longer self-evident, but must be made understandable anew”, it can be seen as “power and source of expression” or simply as something, that influences body temperature, mental power and muscle tension. So, the breath impacts

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50 ibid., 15.
51 ibid., 119.
52 Middendorf, Ilse: Der Erfahrbare Atem. Eine Atemlehre (Paderborn: Junfermann Verlag, 1984), 23f.
53 Rüdiger, Der musikalische Atem, 115.
54 Rüdiger, Der musikalische Atem, 117.
55 ibid., 115.
56 ibid., 119.
57 ibid., 120.
movement and posture and those again affect the breath, as well\textsuperscript{59}. This again has an impact on how comfortable we are with our instrument, especially on stage (see more about this in the following chapter “Breathing against stage fright – why?”). Finally, there is an interaction: it depends on the posture if the right breathing is possible and the other way around because a good position of the head, the spine and a relaxed shoulder area need breathing with the whole nose\textsuperscript{60}. A flexible body as a prerequisite for a free, expressive music playing with a big sound is only possible with those parameters.

3.2 Breathing against stage fright – why?

To breathe deeply is a good tool against upcoming stage fright with its many negative physiological consequences. “The way we breathe affects our posture, degree of relaxation and the body’s ability to function”\textsuperscript{61}. Therefore, it is important to be aware of the breath even if we don’t play a wind instrument. The breath affects the whole body because oxygen comes with the blood to the cells and then, carbon dioxide is transported to the lungs and exhaled\textsuperscript{62}.

A typical sign of stage fright is that we don’t breathe deeply anymore. But the problem is that the upper breathing causes tension in the neck which again prevents blood from circulating as it should\textsuperscript{63}. Both the posture and the musical performance change for the worse because the body reacts on stress and anxiety. So, the key is to manage the upcoming fear and stress and consequently their physiological effects through breathing (and of course, the psychological ones as well, but this is not the point here) so that

\textsuperscript{59} Rüdiger, \textit{Der musikalische Atem}, 125.
\textsuperscript{60} ibid., 129.
\textsuperscript{61} Rosset i Llobet / Odam, \textit{The Musician’s Body}, 14.
\textsuperscript{62} Rosset i Llobet / Odam, \textit{The Musician’s Body}, 14.
\textsuperscript{63} ibid., 14.
adrenaline remains on the right level to support the performer with its positive energy\(^{64}\).

Therefore, breathing exercises should be a good preparation for the right level of stage fright – this was my point of departure. Cognitive behavioural therapy (CBT) and beta-blockers are the best researched areas in music medicine\(^{65}\) and there is also research regarding relaxation and movement\(^{66}\) but so far, I have not found any specific studies regarding the breath and its influence on stage fright and stage presence. So, I definitely could not know how my project would develop, which results I would get and which findings would come up.

### 3.3 The Perceptible Breath by Ilse Middendorf

Before presenting the teachings of *The Perceptible Breath*, I want to say some introductive words about its founder – Ilse Middendorf. Ilse Middendorf (1910-2009) is a key person for the development of the so-called *pneopedy*. Pneopedy means “(...) the work at the breath, posture, voice and body movement, shortly: the work at the body”\(^{67}\). She trained as gymnast and dancer and later, she founded an institute for breathing therapy and breathing education in Berlin, the Ilse-Middendorf-institute. All the work she did was self-taught and was based on her own observations and experiences\(^{68}\). The psychology behind her teaching was influenced among others by Carl Gustav Jung\(^{69}\).

The focus of the teaching itself is to get to know one’s own breath by letting it come by itself, not by doing or forcing it in a particular way. It means that

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\(^{64}\) Klickstein, *The musician's way*, 135.
\(^{65}\) Fernholz et al, 2.
\(^{66}\) ibid., 2.
\(^{67}\) Derbolowsky, Udo: ”Pneopädie,” in *Wer mich nicht liebt ist selber schuld* (Basel: Springer, 1991) 158.
\(^{68}\) Middendorf, *Der Erfahrbare Atem*, 5.
\(^{69}\) ibid., 11.
the method of *The Perceptible Breath* is perceptible because of our ability for sensation and not because of the mind’s control\(^70\). It is important to say that Middendorf’s method is not goal-oriented, not a technique to reach some objective. It is an individual development towards your own human truth – the “body-soul-spirit unity of the human being”\(^71\).

Putting it simply, *The Perceptible Breath* of Middendorf is a third way to breathe, besides the unconscious breath and the conscious breath. But you can’t develop anything out of the unconscious breath because it is and remains unconscious. And the conscious or mind controlled breath will be partial and have its limits because the consciousness is mostly rational\(^72\). Only if the breath is a continuous movement through the whole human being, can you experience real reality and life in the Now will develop\(^73\).

New bodily experiences and sensations become possible and this again requires openness and impartiality (that is to have no preconceived ideas). And experiences gradually become knowledge when combined with intuition\(^74\). A keyword in the process of discovering *The Perceptible Breath* is patience. At last, you have to experience this new kind of breathing and you have to learn and also to understand it. All those steps need time and this is an individual process. But once it has matured and developed, the breath will move from the inside outward and you can experience and feel harmony, joy, balance and inner greatness\(^75\).

### 3.3.1 Middendorf’s method and exercises

The teachings of *The Perceptible Breath* have three keywords: breathing, focusing, perceiving. The breathing method can be summarized as following: “We let our/ Breath come./ We let it go/ And we wait, until it/

\(^{70}\) ibid., 9.
\(^{72}\) Middendorf, *Der Erfahrbare Atem*, 18.
\(^{74}\) Middendorf, *Der Erfahrbare Atem*, 18.
\(^{75}\) Middendorf, *Der Erfahrbare Atem*, 29.
Comes back naturally”.\textsuperscript{76} This way of breathing is very different from other breathing methods because they suggest to breathe either unconsciously or to control and regulate breathing deliberately\textsuperscript{77}.

To focus is to be consciously present at a certain area of your body or in your whole body. That is also a foundation of the teaching because it enables “awareness of [one] Self”\textsuperscript{78}. This awareness “is the fundamental ground for all [perceptions] that come into being”\textsuperscript{79}.

Finally, the ability to perceive is also an important base of the teaching. Reacting in response to physical influences enables you to perceive. And through breathing, sensations spread out through the whole body\textsuperscript{80}. Here, it is important to say, that perception does not mean feelings: perceptions are experienced through the sensitive nervous system. Feelings arise in response to what has been perceived\textsuperscript{81}.

Ability to breathe, ability to perceive and ability of being present develop through the interaction of breathing, perceiving and focusing. Together, they initiate a feeling of wholeness and openness. This brings a change to an individual’s whole attitude and posture\textsuperscript{82}.

So, the exercises themselves are not about training the breath in a certain way. On the contrary, the base of the exercises is the individual, natural rhythm of the breath. All exercises consist of body movements that train one’s awareness to perceive so that the breathing movement is perceptible in the whole body\textsuperscript{83}.

\textsuperscript{76}Middendorf, \textit{The Perceptible Breath}, 19.
\textsuperscript{77}“Der Erfahrbare Atem”, Erfahrbarer Atem Middendorf (accessed August 9, 2021), \url{https://www.erfahrbarer-atem.de/der-erfahrbare-atem}.
\textsuperscript{78}Middendorf, \textit{The Perceptible Breath}, 21.
\textsuperscript{79}ibid., 21.
\textsuperscript{80}ibid., 21.
\textsuperscript{81}Middendorf, \textit{Der erfahrbare Atem}, 21.
\textsuperscript{82}“Der Erfahrbare Atem”.
\textsuperscript{83}ibid.
Exercises of Ilse Middendorf can be performed in three positions: standing, sitting or lying down. For all kinds of exercises applies that you start a breathing session with stretching because it awakens your body and because “[it] is the key to getting to know one’s breathing”\textsuperscript{84}. Furthermore, there are exercises which are divided after “the three spaces in the trunk”\textsuperscript{85}. The \textit{lower space} means the area including the sit bones, the pelvis, the hip and the sacrum. The \textit{middle space} is the area between navel and breastbone and therefore also the lower ribs and the middle spine. The \textit{upper space} means the area including shoulders, armpits, the clavicle, the upper and the cervical spine. An exercise in a certain trunk space consists of focusing on that body part, of moving it according to the exercise instructions, of perceiving all what you are able to perceive in that moment, of submitting yourself to the breath and consequently breathing in your personal breathing rhythm. The exercise enables deeper breathing and breathing movements increase in the exercised area. Then, there are also exercises which combine the three spaces. With these exercises, “you will now become aware that the breathing spaces are not complete within themselves, but may be perceived as a whole”\textsuperscript{86}. Moreover, there are exercises which address the “breathing space and the breathing force”\textsuperscript{87}. With those exercises, you are able to perceive that your breathing has different directions within your body, such as a rising, a descending or a horizontal breathing\textsuperscript{88}. The exercises are again not sufficient by themselves and should be combined with those for the three spaces in the trunk.

\textsuperscript{84} Middendorf, \textit{The Perceptible Breath}, 132.
\textsuperscript{85} ibid., 133.
\textsuperscript{86} Middendorf, \textit{The Perceptible Breath}, 138.
\textsuperscript{87} ibid., 148.
\textsuperscript{88} ibid., 148-152.
The third part of exercises addresses the “special fields of the body to work on”⁸⁹, such as the hands, the spine or the joints. Working on the special fields of the body makes you perceive that your body is a unity. The body is a big whole in which you feel yourself comfortable and awake and where joints are transitions and have a “bridge-character”⁹⁰.

As I already mentioned, it is necessary to combine all those exercises because they depend on each other and influence each other. Combined together, the exercises let you explore all your bodily areas and make them awake. They lead to a deeper sensing and feeling and to a “perceptive consciousness”⁹¹. Through the exercises you become aware, “that the spiritual, mental and bodily are experienced and not only just thought about”⁹².

Once all the exercises, which I described so far, are performed and experienced, there is one more step that you can take in your breathing exercising: namely to discover “the relation between the outer and the inner”⁹³. This means to perceive your breathing movement with and in your surrounding (by that I intend the back side, the front side, as well as left and right sides of the body). The exercises I performed are described in more detail in the chapter “Doing breathing exercises”.

In conclusion, one can say that the breathing methods developed by Ilse Middendorf go very deep to the core of our personality because they “allow an integration of body, soul and spirit by focusing, perceiving and breathing. [They] lead us to an enlargement of the consciousness and to self-experience”⁹⁴. These breathing methods allow you to develop as a person and a human being. So, the contact with the own body is conscious and

⁸⁹ ibid., 155.
⁹⁰ ibid., 163.
⁹¹ ibid., 171.
⁹² ibid., 171.
⁹³ Middendorf, The Perceptible Breath, 171.
⁹⁴ ibid., backside of the book cover.
attentive. This makes us creative and rich in sensations, less vulnerable to stress and sickness and more calm and powerful.\(^95\)

4. Report of the practical part

4.1 Doing the breathing exercises

I did breathing exercises by Ilse Middendorf for one hour almost each day over six weeks. At the beginning of each week, I had an online-lesson (one hour) with Hiltrud Lampe who is a breathing therapist at the Ilse-Middendorf-Institute in Berlin. I practiced those exercises that I learned in a lesson for a week until I had the next lesson with new exercises and so on. This six week period became a very intense time in which I really could feel how I was developing. I feel that I developed not only my cello playing, but also personally. I have the feeling that my body changed, both the posture, the mind-set and the inner attitude.

The first “aha-moment” came directly after the first lesson: my mind was completely tired, and I had a bit of a headache because I got so many new impressions and I was so concentrated and focused all the time. I had a rehearsal immediately after that and I was wondering how I should manage it. But it worked out extremely well and I never experienced so far, that the mind could be so tired and exhausted and the body so vital at the same time. Everything that I wanted to do musically and technically on my cello worked out just effortlessly. It was so absurd to me, but of course I also felt lucky.

But worries and resentment grew after the first lesson as well. I recognized that I hardly have any contact to the back part of my body. I already knew that I was kind of blocked somewhere in the lower part of my torso. Maybe I didn’t really know it, but I had a strong feeling that it must be so. But I

\(^95\) “Der Erfahrbare Atem”.
could not imagine that it would be that difficult to focus on my sacrum, to be aware of it and – in addition – to feel breathing movements there. I was feeling just something hard, like a wall or a plank…

Another “strange” experience had to do with having awareness from two different points of view. One exercise was about grasping one of my ankles with my hands and keep the breath just flowing. One time I should focus on my hands and perceive with them, another time I should focus on my ankle and perceive with it. It means that the point of perception jumped to different points of my body. It was not at all that easy to do so and to switch focus and perception. But when it worked, I could feel that something new took place and my foot was prickling. So, on the one hand, I was feeling really down because it seemed to be impossible to get awareness and perception of all the parts of my body. On the other hand, I was really motivated and curious to discover possibilities of a new body awareness.

And I became really attracted by those exercises. Quite soon I could feel changes and new perceptions. For example, I loved the feeling that I had after exercising one foot, how much better contact I had with it to the floor and how off-centre I now felt – not only in my feet but in the whole body. Then, after exercising the other foot, too, I felt a big joy because I was well-adjusted and upright again – only much better than before.

In general, the floor became something like a friend. It is my partner but usually I don’t care about it. And actually, it gives me security and stability, it bears me and I am almost all the time in touch with it. Focusing on and perceiving the floor under me, changes already the way I feel and breath. My feet are feeling wider and more fluent towards outside – a bit like a pancake dough, when you pour it in the pan… My feet are centred but still not stiff and open to the surrounding.

Same applies for the way I’m sitting. My chair is something like the floor, just for the seat bones. Doing exercises like rolling on my seat bones or like “walking” with them on the seat cushion makes them feeling not spiky,
sharp or hard but round, soft and wide. In addition, when I breathed in a certain way while rolling from one seat bone to the other in a half-circle movement, I felt more flexibility in my torso and still a good grounding to the chair and the floor. Also breathing movements became bigger and the upper part of body was swinging delicately while I was sitting and focusing on my seat bones. That is actually the procedure you should do after each exercise: you sit down, you focus, you breathe, you perceive.

Quite soon, I had to yawn quite often while doing exercises – especially those, when I was stretching or patting my armpits or the sacrum. This yawning came from so deep that tears always run over my cheeks. My teacher Hiltrud Lampe used to say that this is my subconscious that sends a signal because it likes a certain movement or touch. Furthermore, yawning is a kind of stretching from the inside…

Gradually, I began to get to know my body – I could feel it in a new way. I gained the ability to focus on different parts of it, I could perceive there – I “was” there and I could breathe in different parts of my torso. I thought I got the biggest present when I started to feel breathing movements between my shoulder blades as well as in my sacrum! That happened in an exercise-session when my back was in the centre of all exercises. I remember that I was as sick as a parrot first, when starting this session. The simple exercise was to roll backwards on my seat bones and to swing back on them again. The question is, if and how my breath participates in this movement. I exhaled while rolling behind my seat bones and I inhaled while swinging backward again. And this was “wrong” according to the teachings of Middendorf… but I could not do it the other way around. I was now facing a choice: giving up or continue discovering? Finding courage to search for the perceptible breath or feeling depressed because I was not able to find it (yet)? I decided to exercise and let the breath to show me the path! I wanted to discover this liberty in my lower torso – a liberty in that area which used to be tense when both the weight of my cello and my arms on it lay on me. What sound and resonance would then arise if that pressure and tension
disappeared?! And finally, the “correct” breath came: I did my exercises and while I was rolling behind my seat bones, I breathed in naturally. So, I breathed out while swinging back on my seat bones again. That means, my exhaling makes me upright. What I experienced here is the “Perceptible Breath’s” law: when I perceive myself (at a certain point of my body), I have to breathe in while stretching (that point) and I have to breathe out while releasing (that point) and swinging backwards to my initial position. And really perceiving myself in my sacrum while rolling backwards and forward on my seat bones allowed me to feel my breath in my sacrum when I was focussing, perceiving and breathing after the exercise.

To feel my breath in my sacrum was probably the key experience in those six weeks of breathing exercises. I could feel my personal development and participate in it. From now on, everything just grew. Of course, there were also setbacks and days when I was not quite able to focus and to perceive. But I could still feel differently than I did it before starting with the breathing exercises. Generally, I felt much more positive, more open, happier, luckier and all this influenced also my way of practicing. My exercising on the cello became more colourful and lively. But here as well, I experienced setbacks. Right after I started with breathing exercises, I practiced a lot while focussing on my posture – especially on the contact between my feet and the floor and respectively between my seat bones and the chair. I could feel positive changes in the way I was sitting and how I was playing my cello. Then, I tried to transfer different movements from breathing exercises to my practicing on the cello, for example to swing from one seat bone to the other. I experimented and first, I felt good about it, but then, I was lost and didn’t really know how to sit anymore. I was hardly able to play a passage without being confused and getting lost on my fingerboard. Everything became a mess. And from this bottom point, I was able to build up my practicing again, now with playing and sitting in a new way. The cello and I became a unity. Playing in my practicing room became so easy and creative. Suddenly, there was much more space to think about music and to feel it. Playing and exercising were no longer a permanent
struggle with technically difficult passages. I could manage them quite effortlessly and if not, I could find a way to do so.

I was no longer feeling so small. I started to allow myself to take more space. This feeling began to grow with an exercise which should be performed while sitting or standing. I let my forehead drop down to my chest and gradually, my head’s weight drew my shoulders, my upper back and then my lower back so far that my head and my arms were hanging down. After enjoying this position with my head hanging down for a while, I rose back from my sacrum – vertebra by vertebra – back in my “original” position. My head was hanging down during the whole movement and was the last to regain its vertical position. Then, I focused and perceived the whole length between my feet and the top of my head. After that, I looked around in the room at the eye level. I was feeling much bigger. Moreover, everything seemed to be much brighter. I really could feel that I took more space in the room than before the exercise. At the same time, I felt an inner warmth, happiness and calmness.

To feel warm, happy and very calm became my new basic perceptions and enabled me to continue developing on this path. It was already a big experience to really feel how my body expanded when I was breathing in, and how something contracted in the middle part of my body (above my navel) as I was exhaling. Putting my hands on this part of my body after a breathing session, I really could feel a power emanating under my hands.

At the same time, I had another important perception: feeling different directions of my breath simultaneously was kind of a sensation! I could feel the directions that I already mentioned (expanding/contracting), and in addition I discovered, that my breath has an upward direction when I breathe in and it goes down when I breathe out. Moreover, I could feel something like waves in my torso, which means two different directions of my breath that meet each other and collide and then continue flowing each in its own direction. I can’t find better words to describe this perception, but it was really an awesome and – to me – completely new experience.
My breathing’s different directions grew further as I was doing exercises that involved the front side and back side of my body. One exercise was to swing forwards and to push my weight to my front side when I had to breathe in and to swing back in my original position when I was breathing out. Doing this for a while I could feel something like a warm carpet over the front side of my body. At the same time, this part was so soft and open to the surrounding, as if there were no borders. Probably, the most beautiful perception I had, was that everything felt brighter and lighter. It started already when I was swinging back to my original position: I always had the feeling that I brought some light back with me.

I performed same exercise with my back side: I was leaning backwards when I was breathing in and swinging forwards when I was breathing out. Focusing and perceiving during and after this exercise, I could feel that the back side of my body became softer and wider. Nevertheless, I needed some courage to lean back. It was something new to me to lean back when physically there was nothing to lean against. I had to let myself go and just be there. I would not say that I was insecure, but it was a new experience that I had. And interesting enough, I had the feeling that I was bringing back something “dark” with me when I was swinging to my original position.

Experiencing both leaning directions for themselves allowed me to discover a new third experience: As I was swinging alternately backwards and forwards, I now experienced the forward movement but still kept my perceptions from the back side and vice versa. This was a big insight and an achievement for me – for me as a musician, as a cellist but also for me as a human being, for me as “myself”: both my front side and my back side (with all their personal and subjective feelings and associations, such as light and darkness, hope and insecurity, future and past) belong to me – everything is ME and everything is just here and now. And if I have all this present in my perception and in everything that I feel, I will be more of all this. I will be more my true self.
It is probably self-explanatory that such conditions enable a different, a new and a better music playing. So, the time in my practicing room became livelier and more creative and most of the time, I had a lot of fun. When I noticed that a certain part of my body needs to be more awake or more sensitive, I chose one of those many breathing exercises I have learned in order to stimulate that particular body part. Then, I would feel refreshed and would go on exercising on my cello. Practicing technically difficult parts became a game for me – I really played with them. There was no longer a fight, which I used to be sure to lose in case of a stress situation and stage fright. Indeed, I started to focus on the music and listen to what I was playing. I was impressed that I could make so much progress just in six weeks.

All these experiences concerning the practicing room are very valuable for me and I hope they will allow me to handle stage fright in a better way. Therefore, I will definitely continue to perform my breathing exercises in the future both to become a better musician and to fight my stage fright.

As I mentioned in the introduction, I was measuring the blood pressure, the oxygen in my blood, the pulse and the finger temperature both 30 minutes, 15 minutes and 5 minutes before each breathing session and then, directly after each breathing session (and then 15 and 30 minutes later). It was remarkable, that mostly only one of those measured parameters usually had a better condition after I did breathing exercises. It happened once – almost at the end of those 6 weeks – that I had 100% oxygen in my blood after the breathing exercises! Already at the end of that breathing session, I could feel that something was different and that I was experiencing something new and somehow incredible: focusing in myself, I could perceive a vastness, a unity filled with light and warmth which I had never felt before. This was actually the only time in a breathing session, that I could feel something which could be reflected in the measurements, too. Otherwise, the measurements regarding the breathing exercises (see the graphs in the following chapter “The recordings”) show a quite constant curve. But regarding stress, the
exercises affect bodily stress symptoms in a positive way. More about this in the following chapter.

4.2 The recordings

The recordings were planned in such a way, that the first one took place before I started with breathing exercises, the second one in the middle of the exercising period and the last one at the end of the last week of breathing exercises. Moreover, I chose a piece for the recording which I have already been playing over years and which I have performed quite often, too. The idea was, that the musical and technical level of the piece should be quite the same in each recording. A recently learned and never performed piece would, on the contrary, probably improve quite a lot with each performance. So, my decision was to record the exposition of Josef Haydn’s D major cello concerto. I recorded “only” the exposition because it should not become to long for those who would listen to the recordings.

In order to have the same technical conditions each time, I did all recordings in the same studio at KMH and used same microphones, always with the same distance to my cello. So, the starting position was always the same so that a comparison regarding sound, phrasing, interpretation and so on would be possible between the recordings.

I was very nervous before the first recording. Knowing that I had one chance to record the piece and that it will forever be like this and that others will listen to it made me really nervous. At the same time, I was very curious about what I will experience during the recording and then in the following six weeks with breathing exercises. Moreover, it was very exciting to measure the medical parameters which I have mentioned in the introduction. And I was really surprised how strongly they changed before and after the recording. My blood pressure, for example, was much higher 5 minutes before the recording than 30 minutes before it and my finger
temperature was incredibly low 5 minutes before the recording and already quite high 30 minutes after the end.

I have to say that I suffered a lot before the recording but I felt quite comfortable when I was playing. I could really let myself go with the music and I was not busy with controlling each note. I was very happy and relieved after the recording and also a bit proud.

Before the second recording, I was not that nervous at all. But I have to say that I was very busy with a chamber music concert two days before and with a cello class concert which took place the evening before and worked out quite well. So, I was very tired that morning when the second recording took place. I was absolutely not sure how I would manage the recording: the muscles in my arms were hard, my wrists and my fingers stiff. I became a bit nervous, but especially, I felt uncomfortable in my body and absolutely not ready to make a recording. I managed to change that feeling a bit thanks to my breathing exercises. I did them before the recording and then, I felt more awake. In addition, the measured parameters didn’t show such big differences as before the first recording. I suffered not so much as the last time. But I didn’t feel that comfortable when I was playing the second recording. I was afraid that I would play out of tune and because of that, the whole intonation felt shaky and all the shifts made me stressed and tense. In addition, I was quite busy with controlling notes and I was afraid to get a black out. At the same time, I was thinking about the class concert the evening before, how much fun I had to play there and how uncomfortable and tired I was feeling now. I was absolutely not able to focus on the present moment. The whole recording was a kind of battle for me and after it, I was just not content at all, but somehow, it did not matter to me. I felt mostly tired and unmotivated.

The third recording was an interesting experience, too. I could feel a tension before the recording but this time, as well, it was not that I suffered from it. I did again one hour of breathing exercises before the recording. The
differences between the measured parameters (before and after) were almost the same or even a bit smaller compared to the second recording.

Being in the studio then, I needed a bit of courage to start with my playing. I was very calm when I started and from my point of view, the first theme went quite well. Intonation was okay, tempo was quite good and phrasing and interpretation became playful and elegant. After this I had to deal with waves of stress: at some parts, I struggled with my mind and I was afraid to “loose” some notes. But then, it became better again and my playing felt more playful. I experienced the whole recording as series of ups and downs between playful music making and a stressful battle not to forget a note or a fingering and not to fail a shift after the “great” opening.

I have to say retrospectively, that the whole situation of the project study – in which the recordings were somehow representative for my work on the breath in context to stage fright – was mentally really stressful for me. Of course, I tried to be open for everything that I would experience, as I wrote in the introductive chapter. But in some way, I really wanted to develop something in the way I handled stage fright and stress and I really wanted to show that breathing may be a solution. And therefore, I really had high expectations for the recordings – at least for the last one. I could already imagine, when I was planning the project, that the second recording would not be the best one because the breathing exercises were quite new to me at that time. It is well-known that physical achievements are not the best when such big changes take place because it takes time to adjust to them. And for the first recording, I hardly had any expectations: everything was new and if it turned out to be bad, I just could have used the excuse that it was the first time and that it would become better later with breathing exercises. But of course, I wanted to do it well, too.

If I sum up my impressions during and after each recording I would say, that the best one was the third recording, the second best the first recording and the worst one was the second. Considering the level of my bodily stress, stage fright and uncomfortable feelings, I personally would say, that the
third recording was definitely the best one, too, and second and first recordings were quite the same – the second recording maybe even a bit worse than the first one because I felt so powerless. Actually, I perceived much more stress and nervousness during the first recording, but after it, the adrenaline made me happy, relieved and content. I was even more curious to see, how the audience members would perceive the recordings and how they would fill in the questionnaires.

Even if my subjective perception of the recordings seems to be a bit unclear and presents more ups and downs and not a clear positive development in how I personally could deal with stage fright, the measurements, on the contrary, show a continuous improvement and that the breathing exercises influenced the way I was handling stress situations in a positive way. As I already mentioned in the chapter “Types of stage fright”, stage fright is a complex phenomenon and has different subtypes. It means that there is not only one method which can solve all kinds of stage fright problems. The breathing exercises, for example, were an attempt to relieve bodily stress symptoms. This may explain my dissatisfaction during and after recordings because I was still afraid to forget the notes which again made me stressed and tensed. This also could be an explanation why I perceived the recordings as series of ups and downs.

Anyway, my attempt to improve the body’s reactions to stage fright worked. My body’s stress symptoms really improved over the recording period thanks to the breathing exercises. Already before the second and the third recording, for example, I was not afraid that my bow-arm would shake. I think that this development of how I could handle physiological effects is quite amazing, especially if you bear in mind that it was a result of a relatively short period of breathing exercises. I can really imagine that I will feel progress even in the psychological symptoms of stage fright (for example fear of blackout) if I continue doing breathing exercises by Ilse Middendorf. The exercises have already changed both my bodily conditions and my psychological attitude in the practicing room and even in the
preperformance period, as well as in my life in general. To experience and live this mental calmness, openness and positivity even on stage will probably “just” need time, patience and exercise.

Also, the measurements confirm that my body’s reactions to stage fright improved, as you can see in the following graphs. In these graphs, I compare three states of my body represented by three curves:

- — = recording before I started with breathing exercises (in the graphs this is called recording without relaxation\(^{96}\)), which is recording one
- --- = recording with breathing exercises (in the graphs called as recording with relaxation), which is the average value of recordings two and three
- ··· = the average value of all days with breathing exercises and no recordings (in the graphs this is called exercising with relaxation)

These states of my body were measured in regard to different parameters. The different parameters are blood pressure (subdivided in systolic blood pressure, blood pressure amplitude, diastolic blood pressure and their mean value)\(^{97}\), finger temperature, arterial blood oxygen saturation and heart rate.

As I already mentioned in the chapter “Doing breathing exercises”, the curve regarding exercising with relaxation is quite constant in all measured parameters and you can’t really see a development. On a normal day without recordings, I normally don’t feel any stress before my breathing exercises and measurements show no particular relief afterwards.

\(^{96}\) a term used in the music medical context.
\(^{97}\) Explanation: Systolic arterial blood pressure = contraction/pumping phase of the heart; diastolic arterial blood pressure = relaxation phase of the heart; blood pressure amplitude = difference between systolic and diastolic blood pressure; mean arterial blood pressure = mean of systolic and diastolic blood pressure.
On the contrary, you see significant changes if you compare the curve regarding the recording without relaxation with the one which shows the recordings with relaxation: both blood pressure, fingertip temperature and heart rate show their extreme values around the recordings. That means that blood pressure and heart rate are high and fingertip temperature low – all signs of bodily stress. If we compare the curves for two different recording situations (with and without relaxation exercises before) you can see, that

98 It should be noted that these results represent measurements from only one person. Other people may react differently to the breathing exercises which means that these graphs would have looked differently as well.

99 Stress leads to an elevated secretion of the two sympathetic transmitters epinephrine (adrenaline) and norepinephrine (noradrenaline), both of them increase heart rate (esp. epinephrine) and constriction of the small vessels in the body’s periphery (e.g. arms and legs – esp. norepinephrine). This leads to elevation of all the mentioned blood pressure parameters. Constriction of the peripheral arteries enhances the stiffness of the arterial vessel wall resulting in an increase of the blood pressure amplitude.

Fingertip temperature is an indirect sign of peripheral arterial vessel contraction. In a stress situation the sympathetic neurotransmitters epinephrine and norepinephrine lead to contracture of the arteries thus reducing the blood flow in the peripheral tissues. Reduced blood flow also means reduced heat transfer and more time for the warm blood to cool down on the periphery. This results in a temperature decrease in the periphery, for example the fingertips. Therefore fingertip temperature is an indirect measure of the stress level; low fingertip temperature means high stress level.

The fingertip temperature is lower in the recording situations, showing that merely the state of recording leads to stress.
the breathing exercises had a positive effect on blood pressure and pulse, whereas we don’t see a difference for fingertip temperature between recordings with or without relaxation exercises. The lowest fingertip temperature is five minutes before and immediately after the recordings. Logically, stress is here at the peak. After the recording, fingertip temperature rises above the initial level (30 min before recording). That is a physiological reaction – after a period of vasoconstriction, vessel relaxation is usually compensatory overexpressed to guarantee good tissue perfusion after the previous period of depletion of oxygen supply in tissue and nutrition (I thank Prof. Björn Dirk Krapohl for the information on physiological processes).

Only the measurements of the arterial blood oxygen saturation could not give any constructive feedback. We just see a mild decrease in oxygen saturation around the recording phase in the curve of recording with relaxation. Comparing the change in oxygen saturation overall, the difference between maximum (99%) and minimum (98%) is just one percent; therefore oxygen saturation does not seem to be a good parameter for detecting relevant effects.
In conclusion, I would say that I was happy that the measurements confirmed my subjective experience of stage fright showing a significant difference before and after the recordings for many parameters. I was even more happy that measurements showed a reduction of bodily stress and stage fright after a period of breathing exercises.

How the breathing exercises influenced the quality of my recordings as perceived by independent audience members will be discussed in the chapter “The questionnaire for the audience”.

4.3 The questionnaires/questions about the mental state

I developed and prepared questionnaires for the mental state not in order to get a statistical base – this doesn’t make sense in a project study with only one participant (myself). In this case, the questionnaires helped me to document, among others, my practicing situation with the cello, issues that I was aware of while practicing and different kinds of stress symptoms that I experienced in these seven weeks (one week without breathing exercises and six weeks with breathing exercises). The questions helped me to compare the weeks with each other and then, to find out if there was an improvement or a regress in mental and bodily states in connection to
breathing and stage fright. Moreover, the questionnaires and my results may be useful for the BCMM (Berliner Centrum für Musikermmedizin, which supported me in creating this project study – as I already wrote in the introduction) as far as my project study presents first data on mental and bodily states in connection to breathing and stage fright. In the future, this could lead to a new scientific study of this subject at the BCMM. This is why I present the questionnaire here. Furthermore, it is part of my practical work which led to some results and conclusions (see the section after the presentation of the questionnaire) – even if I prefer not to make all answers public because of privacy concerns.

I prepared the questionnaires with the help of different sources and already validated questions. Below, the questionnaires are presented already with a compilation of results. The questionnaire for week one (before the breathing period) was slightly different from those for weeks two to seven. For questions that are not present in both questionnaires, there are short notes in parentheses.

Questions regarding practicing situation:

1.) How is your music practice habit? (Check one) (Adopted by the literature passage: “Health-Pain-Injury Inventory“, Lee 2012, p.94c):
   a) I practice less than 2 hours
   b) I practice 3 or 4 hours
   c) I practice more than 4 hours

   Answers:

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2.) How is your practice routine? (Adopted by the literature passage: “Health-Pain-Injury Inventory“, Lee 2012, p.94c):
   a) I begin practice with warm ups
   b) I finish with cooling down,
   c) I do body exercises in between,
   (question added by me)

   Answers:

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Questions regarding playing the instrument:

1.) How aware are you about your body function when you play your instrument? (Adopted by the literature passage: “Physical-Functional and Musical-Performance Efficacy Assessment Survey (PME)”, Lee 2012, p.94d):

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Not at all | Sometimes | Usually | Most of the time | Always
--- | --- | --- | --- | ---
1 | 2 | 3 | 4 | 5
1 | 2 | 3 | 4 | 5
1 | 2 | 3 | 4 | 5

2.) How comfortable are you with your movements as you play your instrument? (Adopted by the literature passage: “Physical-Functional and Musical-Performance Efficacy Assessment Survey (PME)”, Lee 2012, p.94d):

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<td>a) 3</td>
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<td>a) 4</td>
<td>a) 4</td>
<td>a) 4</td>
<td>a) 3</td>
<td>a) 4</td>
<td>a) 4</td>
</tr>
<tr>
<td>b) 2</td>
<td>b) 2</td>
<td>b) 3</td>
<td>b) 4</td>
<td>b) 3</td>
<td>b) 2</td>
<td>b) 4</td>
<td>b) 4</td>
</tr>
<tr>
<td>c) 2</td>
<td>c) 3</td>
<td>c) 3</td>
<td>c) 4</td>
<td>c) 4</td>
<td>c) 3</td>
<td>c) 4</td>
<td>c) 4</td>
</tr>
</tbody>
</table>

Not at all | Sometimes | Usually | Most of the time | Always
--- | --- | --- | --- | ---
1 | 2 | 3 | 4 | 5
1 | 2 | 3 | 4 | 5
1 | 2 | 3 | 4 | 5

3.) How aware are you about your musical technique and sound when you play your instrument? (Adopted by the literature passage:}
“Physical-Functional and Musical-Performance Efficacy Assessment Survey (PME)”, Lee 2012, p.94d):

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Sometimes</th>
<th>Usually</th>
<th>Most of the time</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) My technique</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b) Tone</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c) Musical flow and fluency</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

4.) How comfortable are you about your musical technique and sound when you play your instrument? (Adopted by the literature passage: “Physical-Functional and Musical-Performance Efficacy Assessment Survey (PME)”, Lee 2012, p.94d):

<table>
<thead>
<tr>
<th></th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) My technique</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>b) Tone</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>c) Musical flow and fluency</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

Questions regarding anxiety/stress

1.) Stress-symptom-score:
How much stress did you experience in the last week? (set a cross)

No stress at all •-----------------------------------------------•maximal imaginable stress (10 cm)

<table>
<thead>
<tr>
<th></th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>7.5</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

2.) Stage fright/ performance anxiety:
How strong do you rate your average performance anxiety? (to be filled in before a recording)

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>No performance anxiety</td>
<td>maximal imaginable performance anxiety</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>no recording</td>
<td>no recording</td>
<td>6</td>
<td>no recording</td>
<td>no recording</td>
<td>4</td>
</tr>
</tbody>
</table>

3.) Set a cross if the following Preperformance Effect applies for you
(Adopted by the literature passage: Unmasking Performance Anxiety, Klickstein 2009, p.137):
- Avoidance of practice
- Obsessive practice
- Busyness/ disorganization
- Depression/ fatigue/ laziness
- Worry/ distorted thinking
- Headaches
- Insomnia
- Difficulty focusing
- Stomach upset/ loss of appetite
- Trouble with relationships
- Academic decline
- Substance abuse

(This question was only present in the questionnaire for week 1)
[The answers are not presented because of their private character]

4.) Set a cross if the following At-Performance Effect applies for you
(Adopted by the literature passage: Unmasking Performance Anxiety, Klickstein 2009, p.138):

**Physical/Behavioral Effects**
- Trembling
- Cold hands
- Racing heartbeat
- Heavy perspiration
- Nausea/butterflies/wooziness
- Muscle tension
- Technical insecurity
- Rapid or restricted breathing

**Mental/Emotional Effects**
- Fear
- Confusion
- Memory lapses
- Distorted thinking
- Agitation
- Hypersensitivity
- Negative self-talk
- Shame
Dry mouth
Urge to urinate
Anger
Panic

(This question was only present in the questionnaire for week 1)
[The answers are not presented because of their private character]

5.) Set a cross if the following Postperformance Effect applies for you
(Adopted by the literature passage: Unmasking Performance Anxiety, Klickstein 2009, p.129):
- Distorted thinking
- Shame
- Anger/ hostility
- Misattribution
- Avoidance of practice
- Depression/ fatigue
- Persistent insomnia
- Trouble with relationships
- Academic decline
- Substance abuse

(This question was only present in the questionnaire for week 1)
[The answers are not presented because of their private character]

6.) Which physical stress-symptoms do you experience? ( to be filled in at the second and third recording), (Adopted by literature passage about typical indications of stage fright, Spahn 2012, p.12)

<table>
<thead>
<tr>
<th></th>
<th>a) Fast heartbeat</th>
<th>b) Shallow breath</th>
<th>c) Cold and sweaty hands</th>
<th>d) Dry mouth</th>
<th>e) Red or pale face</th>
<th>f) Tremor in arms and legs</th>
<th>g) Sickness</th>
<th>h) Headache and dizziness</th>
<th>i) Urge to urinate or diarrhea</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td></td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

(This question was only present in the questionnaires for week 2-7)
[The answers (week 4 and 7) are not presented because of their private character]

**Questions regarding physiological exercises/activities:**

1.) Do you do sportive activities?
   - no
   - yes → ____ /times a week

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes → 2 times</td>
<td>yes → 1 time</td>
<td>yes → 2 times</td>
<td>yes → 1 time</td>
<td>yes → 1 time</td>
<td>no</td>
<td>yes → 2 times</td>
</tr>
</tbody>
</table>

2.) Do you do physiological exercises before/while/after practicing?
   - no
   - yes → ____ /times a week

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>yes → 4 times</td>
<td>yes → 4 times</td>
<td>yes → 3 times</td>
<td>yes → 5 times</td>
<td>yes → 5 times</td>
<td>yes → 3 times</td>
<td>yes → 7 times</td>
</tr>
</tbody>
</table>

3.) Do you do breathing techniques/exercises?
   - no
   - yes → ____ /times a week

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>no</td>
<td>yes → 4 times</td>
<td>yes → 6 times</td>
<td>yes → 7 times</td>
<td>yes → 7 times</td>
<td>yes → 6 times</td>
<td>Yes → 7 times</td>
</tr>
</tbody>
</table>

4.) Do you breathe:
   - in your chest
   - in your stomach
   - I don’t know

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I don’t know</td>
<td>in my stomach</td>
<td>in my stomach</td>
<td>in my stomach</td>
<td>in my stomach</td>
<td>in my stomach</td>
<td>in my stomach</td>
</tr>
</tbody>
</table>
This compilation presents a large amount of data. The following graphs highlight the most interesting findings of the questionnaire. It is remarkable, that all categories that regard *playing the instrument* (awareness of body function, comfortableness with movements, awareness and comfortableness with technique) develop positively over the time with breathing exercises:
Even more interesting is, that all investigated parameters show a setback in week 6 (except the category of comfortableness with movements because there was a setback in week 5). This can be explained in the following way: in the beginning, you can feel quite comfortable if you learn something new on your instrument – first, you can adapt quite well. But before the new way of playing becomes part of the body and/or the brain, there is a phase in which you don’t feel comfortable at all with what you are doing. So, awareness tries to control everything and is somehow everywhere and nowhere at the same time.
Another explanation of the setback of comfortableness and awareness in week six was offered by Prof. Krapohl: in this week, we namely “see an intermittent minimum of exercises and activities. This correlates with the curves of awareness and comfortability. We may conclude that a decrease of awareness and comfortableness leads to a demotivation for physiological exercises and sport activities, or in contrast, a reduction of physiological and sport activities leads to an impairment of awareness and comfortableness which really makes sense”¹⁰⁰.

It is important to notice something else: the physical stress symptoms became better both as measured values (as I wrote earlier) and in my own perception, too. The breathing exercises really had a positive influence on my bodily stress. I ask for understanding that I cannot present my symptoms because they are too private to be published.

I don’t comment in detail the data about my practice duration and routines because there were no specific changes in those domains. This allows me to conclude that the improvements in experienced stress symptoms, as well as in cello playing perception are to be attributed to the breathing exercises by Ilse Middendorf.

¹⁰⁰ Private letter from Prof. Krapohl.
4.4 The questionnaire for the audience

The questions in the questionnaire for the audience are from a study by the BCMM\textsuperscript{101}. Each audience member got such a questionnaire for each recording. With this questionnaire, they evaluated my three recordings of the exposition of Josef Haydn’s Cello Concerto D-major. The members just had the files’ names H, M and V and didn’t know in which order I actually recorded them. The order of recordings was following: first recording is V (26/3-2021), second recording is H (16/4-2021) and third recording is M (10/5-2021).

Here, you see a compilation of results from filled-in questionnaires of all three audience members.

The scale for the evaluation: from 1 = bad to 5 = excellent:

<table>
<thead>
<tr>
<th>The file’s name</th>
<th>Jakob Koranyi</th>
<th>Eva Freitag</th>
<th>Kati Raitinen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic</td>
<td>3 3 4 4 3 4 4 4</td>
<td>4</td>
<td>4 4 4 4</td>
</tr>
<tr>
<td>Tempo</td>
<td>3 4 5 4 4 5 3 4 4</td>
<td>4</td>
<td>4 3</td>
</tr>
<tr>
<td>Articulation</td>
<td>3 3 4 4 4 4 4-5 4 4 3</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Sound</td>
<td>3 4 4 4 3 4 3 3 4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Phrasing</td>
<td>3 4 4 4 4 5 3 4 4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Intonation</td>
<td>3 4 5 3-4 4 4 4 3 4 4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Musical interpretation</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

\textsuperscript{101} These questions were provided by Ms. Gabriele Rotter, MD.
<table>
<thead>
<tr>
<th>General evaluation</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>4</th>
<th>4 minus 5</th>
<th>3</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
</table>

Very interesting is that all three audience members evaluated the third recording (M) as the best one (this can be seen very clearly from Jakob Koranyi’s and Eva Freitag’s feedback; Kati Raitinen’s feedback has to be compared with her evaluations of recording H and then, you can see that M got a slightly better rating). This is, of course, an excellent result for my project study! After six weeks, the breathing exercises had obviously not only a positive influence on stress that I experienced because of stage fright, but they also resulted in a hearable improvement of almost all musical parameters.

Maybe even more interesting is that Jakob Koranyi and Kati Raitinen actually rated the recordings in exactly the same order as I was recording them – this means that the first recording is the “worst”, the second one is better and the third, as mentioned, is the best recording. So, they really could hear a stepwise development through the recordings without knowing their order. If you consider these evaluations, there was a hearable development in my performance after a short time with the breathing exercises.

I was quite surprised with this feedback. To me, it was quite obvious that the second recording must be rated as the worst one because I felt really tired before the recording and after it, I was not content at all. This could be explained as following: at the time of the second recording, I was in a phase when I was learning breathing exercises – which were still quite new to me at that time; I tried to find a new way to play the cello and I had to reorganize myself with my playing. This made me feeling uncomfortable and not satisfied, but the audience, on the contrary, did not have to struggle with those feelings and was able to evaluate my performance objectively.
On the other hand, this is contradicted by the evaluations of Eva Freitag. She namely rated the second recording as the “worst” and the first one as next best – exactly in the same way as I experienced the recordings myself. Here, I see my personal perceptions confirmed.

I don’t have a good explanation for this outcome. A possible explanation may be that Eva Freitag knows me and my cello playing since almost six years, that is very well. Jakob Koranyi on the contrary, has known me for one year and Kati Raitinen doesn’t know me at all. This fact, that initially seemed unimportant, could perhaps play a role in the evaluation after all. Maybe, Eva Freitag was able to hear “the real me” and what I was actually struggling with, whereas Jakob Koranyi and Kati Raitinen “only” listened to the music without relating to the person behind it. On the other hand, it can be argued that Jakob Koranyi and Kati Raitinen agree in their evaluations and are therefore in majority – a sign of the “correct” evaluation. But of course, all these reflections are just my speculations!

Here, I also want to underline that two of the audience members emphasized how difficult it has been to evaluate and rate the recordings. Differences were small, which makes it hard to express them correctly only in numbers. Two of the three members also said, that their feedback was just a snap-shot and that they probably would rate the recordings differently at another time.

However, the fact remains that the third recording has been rated as the best one. This suggests that the breathing exercises by Ilse Middendorf, even objectively seen, had an impact on my cello playing in a stress situation.
5. Conclusion

Finally, I can conclude that my whole project – both the subjective experience with breathing exercises by Ilse Middendorf and the empirical results produced by the recordings – was a success. To be able to say this makes me really happy. On the one hand, the breathing exercises made me, my personality, my cello exercising and my cello performing much richer. My time in the practice room was filled with fun, creativity and effortless playfulness. This again provided me a new positive ground for approaching stressful situations i.e. the recordings. The results of my questionnaire about the mental state show that my awareness of body function, comfortableness with movements, awareness and comfortableness with technique developed positively over the six-week period. On the other hand, the medical measurements (arterial blood pressure, heart rate and fingertip temperature) and the ratings of the audience members empirically confirmed an improvement regarding stress and stage fright when playing the cello. Both the subjective and the objective side of the project confirm that Ilse Middendorf’s breathing method and exercises can have a positive effect on stage presence and expressive music making in stress situations, as well as on bodily symptoms of stage fright. However, it cannot be excluded that another person at my place following exactly the same procedure (exercises, recordings, measurements) would have achieved a less positive outcome.

Nevertheless, the objective and empirical side of my project study provide first results regarding the breathing’s influence on stage fright which could be a good start for a further and larger study within the music medicine. Hopefully, a new therapeutic approach to combating stage fright could be developed. But of course, this would require much more research and medical data, especially more recordings with and without relaxation, and, certainly, with many more test persons. It is possible that the results of the recordings’ ratings would also look differently with more audience participants.
Still, this project can exhibit good results on different levels (medical data, subjective perceptions and objective evaluations of the breathing’s influence on stress and performance) which refute possible objections that the project’s positive outcome could be pure luck.

Of course, I can’t say that the breathing exercises represent a panacea against stage fright. Breathing exercises did not make me feel perfectly comfortable with performing. But they were a first – and important – step in the right direction, especially, because I was already quite hopeless about dealing with my performance anxiety. Moreover, stage fright will never disappear completely, no matter what method you use against it. This, on the contrary, is not negative at all, because stage fright also has its positive characteristics (energy, concentration, alertness). In my last recording, these characteristics have been present. Moreover, the positive aspects of stage fright were confirmed by the evaluations from the audience members of the third recording. Knowing that you may not feel completely free, but that your own playing sounds free, resonant and musical is a great encouragement in your own doing. This indicates also an interesting discrepancy between the perceptions of the performer and the audience.

To conclude, it would be really desirable to recognize the importance of breathing in the context of stage fright and to pursue this insight in the area of music medicine research. Hopefully, it would lead to a new way of treating stage fright with breathing exercises – besides those forms of therapy, which have already been researched and confirmed for their effects (beta-blockers, cognitive behavioral therapy).

Especially beta-blockers and other medicines and drugs are unfortunately considered as a solution against stage fright by quite many musicians – of course without any previous medical treatment. This is really a sign that the music world desperately needs new, alternative and promising methods against performance anxiety. In my opinion, Ilse Middendorf’s breathing exercises should be one of those methods. Of course, this method requires a lot of work, patience, discipline and acceptance of setbacks. But for a
musician, who really cares about music, as well as himself/herself and his/her body – but suffers from stage fright – would it be too much of an effort to learn and practice a method like Middendorf’s breathing exercises? A method that allows him/her to grow and mature in personality, that lets the most diverse layers of emotions to blossom, that improves musical and creative practice and makes stage fright with its positive qualities to a companion of a performance?

In my opinion, especially music students, who are at the beginning of their professional career, should know about the breathing’s importance and influence on the music making, the practicing and the performing. Right in the beginning of their studies and also during later stages of the education (i.e. Master’s program) breathing exercises should be integrated in the course plan.

The importance of lectures and courses on music physiology at music conservatories cannot be overemphasized. For example, at both conservatories in Berlin, numerous courses in this field are offered by the Kurt-Singer-Institute\textsuperscript{102}. The concern for musicians’ health and for a healthy music making should be addressed in the music education on university level.

\textsuperscript{102} The Kurt-Singer-Institute for Music Physiology and Musicians’ Health (KSI) is a publicly financed institution founded in 2002 at the University of the Arts (UdK) and at the Hanns Eisler School of Music Berlin (HfM).
6. Bibliography


