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THE USE AND EFFECTIVENESS OF WARM-DOWNS BY BRASS STUDENTS
FROM THE UNIVERSITY OF MISSISSIPI AND BAND DIRECTORS FROM
MISSISSIPPI

A Thesis
presented for the
Master of Music degree
The University of Mississippi

By
David Cuevas
May 2018

ABSTRACT

Although many instrumental directors recognize the importance of warm-downs for their brass players, actual research surrounding the topic is practically non-existent. This study was started with the purpose of determining the effectiveness and use of warm-downs in the state of Mississippi. Twenty brass players from The University of Mississippi were surveyed over the course of four weeks; at the end of each week the subjects would report the amount of pain they experienced while playing. In addition, band directors from various parts of Mississippi were surveyed on how they implemented warm-downs. The study found that there was a direct correlation between the use of warm-down techniques and lower levels of pain experienced.

DEDICATION

This Thesis is dedicated to my parents, Tim and Beth Cuevas, who have always loved me unconditionally and whose good example taught me to work hard for the things that I aspire to achieve.

ACKNOWLEDGMENTS

I would like to thank Alan Spurgeon for his help in editing the final document. I would like to thank my committee for their guidance and constructive criticism. I would also like to thank David Willson for the expertise he provided. Finally, I would like to thank everyone who volunteered to help with this study.

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CHAPTER I

INTRODUCTION

When playing a woodwind instrument, sound is produced when the reed vibrates. The same can be said for brass instruments, the difference being that the lips of the brass player function as the “reed.” With this knowledge, it seems obvious that this can put a great amount of strain on the musculature of the face, and as a result, proper embouchure maintenance is vital to the success of a brass player at any level. But at times, even the most thorough warm-up routines cannot prevent damage. At this point many brass players use what is called a warm-down (or cool down) in order to preserve their embouchures, prevent lasting damage and reduce the amount of pain felt while playing. In most cases, a warm-down consists of playing in the low register of the instrument at a low volume.

The goal of the warm-down is to relax the musculature of the embouchure, and return it to a resting state with the intent of easing the pain felt while playing and preventing long-term damage. In my experience, (as someone who has struggled with embouchure issues in the past) warm-downs are just as important as warm-ups. In this study, I seek to determine the effectiveness of warm-downs as a way of preventing pain in the embouchure using student brass players from the University of Mississippi as subjects. Additionally, I will also survey the use and perceived effectiveness of warm-down techniques by local band directors in Mississippi.

CHAPTER II

RELATED LITERATURE

Research on my topic is very limited. Therefore, the bulk of my related literature is focused on the various ways that the embouchure can be injured, how it can be treated, and how similar injuries can be avoided in the future. My related literature section is comprised of a mix of peer-reviewed journal articles, personal testimonies from music educators and performers; and method books containing valuable information about embouchure health.

In the article “Playing-Related Musculoskeletal Problems in Child Instrumentalists: The Influence of Gender, Age and Instrument Exposure” the relationship between gender and age to Playing-Related Musculoskeletal Problems (PRMP) is discussed. PRMP’s are common amongst long time brass players. The evidence is quite limited, but it suggests that PRMP risk factors are similar in children and adolescents. The aim of the study was to determine the frequency of PRMP’s in children, and to determine if age and/or gender play a role. The study found that female students seemed to be more susceptible to PRMP’s as well as younger students (Ranelli 2011).

Before reading the preceding article, it was my assumption that embouchure health problems might seem like a problem that only high-level or professional musicians might face. But, according to William J. Dawson, More young musicians than old face

these problems. Physicians who see musicians as regular clients recognize that their young patients participate in various musical activities. Treating these problems in young musicians is dependent on proper diagnosis and treatment, followed by rehabilitation of the area affected by ailment. Music educators need to be aware of the potential risks that their respective activities could cause to their students (Dawson 2006).

Awareness begins with the student's initial placement. Placing students on the correct instrument for their physical makeup is a key step in embouchure health. The goal during the instrument selection process is to match the student with an instrument to which he or she is physically suited to as well as one the student is interested in playing. Teachers may need to "sell" students on instruments they might not have originally considered if it would give the students a greater chance of succeeding. Most students who drop out at the end of beginner band do not feel successful their instrument (Brandon 2010).

It is vital to position students for success at the beginning by playing them on the right instrument. While there are always exceptions to the rules, here are a few things to consider when selecting brass players: Firstly, the shape and size of the face must be considered. Those with thin lips that form an even line and even teeth, generally better suited for high brass. Additionally, directors must be aware of distinctive facial features such as "Cupid's bows" or tear drops, when considering students for high brass instruments. For low brass, due to the larger mouthpiece, thicker lips can be accommodated, straight teeth are also less important for low brass for the same reason. Body size is also an important issue. For example: if a student has an embouchure that would be suited for low brass, but had very short arms the director should consider

placing that student on euphonium or tuba (Brandon 2010).

Improper instrument placement can lead to long-term embouchure problems; it is not impossible for someone with a “less than perfect” embouchure for a particular instrument to excel, but this person will require a greater amount of individual attention. Injuries in music often occur as a result of overstress or misuse. Regrettably, these injuries are often ignored or glossed over until they interfere directly with the performance. By this time these problems may have developed into more serious issues. These problems affect all levels of performers, but proper embouchure maintenance can help prevent these issues. Recently, reports of physical problems associated with musical performance have increased. Concurrently, there has also been an increase for clinical treatment of performing arts injuries. It seems apparent that the need to educate teachers, students, and performers about the inherent danger in not properly taking care of their bodies is still often ignored (Brandon 2010).

One such story of physical problems experienced by musicians is the story of Denver Dill. In his book, *Still Playing, My Journey Through Embouchure Surgery and Rehabilitation*, West Point band member Denver Dill recounts his experiences with embouchure damage. What makes his story fascinating is that the injury that threatened his career occurred in high school. Dill successfully completed the rest of his high school career, completed his undergraduate and graduate degrees, and successfully auditioned for a spot in one of the best performing ensembles in the country, all with an injured lip. Dill says in his book that musicians should not try to self-diagnose their injuries: (Dill 2012)

I try to avoid speaking medically, as I am not a medical professional. My curiosity has led me to speak to numerous doctors, surgeons, and

physical therapists. I believe that hurt players NEED to seek out these experts in their respective fields. - Denver dill

The embouchure is a remarkably complex area of the brass player's physique. The many muscles of the face work in unison to create resistance against the air stream to create the "buzz." Despite the immense strength that one can attain, there is also the risk of great injury. In his article, "Embouchure Health: Consistency Maintenance" Andrew J. Pelletier lists his basics of embouchure health: "Listen" to your embouchure. As seen in the book *Still Playing*, it is impressive how one can get used to ignoring the body (Pelletier 1994).

"Listening" to the embouchure is another important technique. This is done by constantly being aware of the embouchure, as opposed to playing in an inattentive manner. This type of attentiveness should begin in the warm up. Get ample rest. A full schedule of performing and traveling is sometimes achieved at the cost of physical health. Getting enough sleep to allow the body time to rest and repair is another vital part of embouchure care. And finally, water. As with any other group of muscles, build up of lactic acid can cause cramping and stiffness; a steady supply of water can alleviate these symptoms (Hembd 2012).

The study presented in the article "From Embouchure Problems to Embouchure Dystonia? A Survey of Self-Reported Embouchure Disorders in 585 Professional Orchestra Brass Players" investigated the frequency of distinct embouchure problems in professional brass players. In the study, 585 professional brass players participated in a cross-sectional study concerning embouchure problems. A self-administered test was given to the participants in order to evaluate embouchure fatigue, embouchure disorders, and their consequences. The results showed that thirty percent of participants reported

embouchure fatigue, and the relative frequency of embouchure disorders was 59 percent (Steinmetz 2013).

The study presented in “Specific Orofacial Problems Experienced by Musicians” aims to give an insight into these problems and practical guidance to general practice dentists. Orthodontic problems, soft tissue trauma, focal dystonia, denture retention, herpes labialis, dry mouth, and temporomandibular joint (TMJ) disorders were identified as orofacial problems of career musicians. In his article, Dan Gosling encourages brass players to think like an athlete. Any successful athlete is very aware of everything they do. As brass players, we should treat our embouchures like the muscles that they are. Almost all high-level athletes will taper off their more intense training as they approach competition and brass players can utilize the same strategy. For example, if you are approaching a major concert you should make a conscious effort to taper off of your most intense practice in order to not stress the muscles of the embouchure (Yeo 2002).

CHAPTER III

METHOD

I received twenty volunteers for my study, representing a diverse range of race, gender, and socio-economic backgrounds. The volunteers also represented several different brass instruments. These volunteers were selected from the top two concert bands from the University of Mississippi in order to maintain a certain level of skill consistency among all participants. The participants included: four trumpet players, four horn players, seven trombone players, three euphonium players, and two tuba players. These volunteers were divided into two groups, control and experimental. The primary concern when creating these two groups was having an equal number of each instrument in each group. Additionally, I did not place anyone who already used any type warm down technique in the control group. All of these volunteers were drawn from the top two concert bands of the University of Mississippi in order to keep a consistency of skill level and the amount of time spent playing each week. The individual responses to the supplemental survey were only available to the researcher, and were deleted when the study concluded.

The control group was instructed not to perform any kind of warm-down after they had finished playing each day, while the experimental group was given a uniform warm-down routine to perform at the end of their playing sessions. At the end of each week, over a four-week period, these students were emailed a link to an electronic

survey hosted by survey monkey where they could anonymously report the amount of pain they experienced while playing, and the amount of discomfort they experienced when they first began to play each day. These measurements were taken on a scale from one to ten, one being no pain and ten being extreme pain.

Additionally, I surveyed band directors, about their experiences with warm-downs. I asked the participants the following questions. Do you experience pain while playing? How often do you as an individual player warm-down? Does warming down relieve any embouchure pain that you experience? Does your ensemble use a warm-down? Do you believe that warming down is an important exercise for your ensemble? Have any of your students complained about embouchure pain? Are warm-downs effective in preventing embouchure injuries? These interviews were recorded and used to calculate the popularity and use of warm-downs. These surveys were submitted anonymously, and the data was deleted after the study.

CHAPTER IV

RESULTS

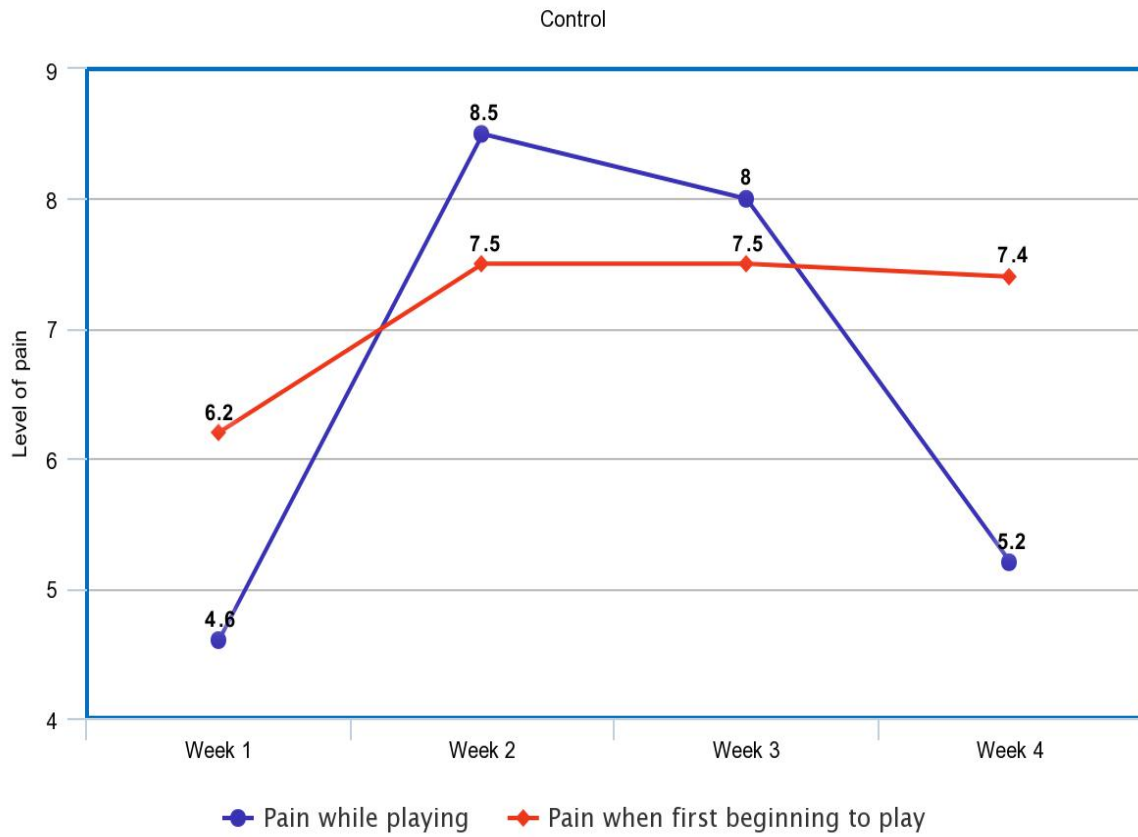
Week one: Both Groups reported similar amounts of pain throughout week one. This established that both groups had at least comparable levels of playing stress and discomfort. The average amount of pain experienced while playing in the control group was 4.6 out of 10 (Figure1), and the average amount of discomfort felt when first beginning to play each day was 6.2 out of 10 (Figure1). Conversely, the average amount of pain felt while playing in the experimental group was 6 out of 10 (Figure 2), and the average amount of pain when first beginning to play was 5.8out of 10 (Figure 2).

Week two: The effects of warm-downs can be seen starting in week two. The levels of pain in the control group either increased or remained stagnant though this week. In the experimental group we see a significant drop in both levels of pain. The average amount of pain experienced while playing in the control group was 8.5 out of 10, and the average amount of discomfort felt when first beginning to play each day was 7.5 out of 10. Conversely, the average amount of pain felt while playing in the experimental group was 4.6 out of 10, and the average amount of pain when first beginning to play was 3.5 out of 10.

Week three: The trends seen in week two continue into week three. The average amount of pain experienced while playing in the control group was 8 out of 10, and the average amount of discomfort felt when first beginning to play each day was 7.5 out of

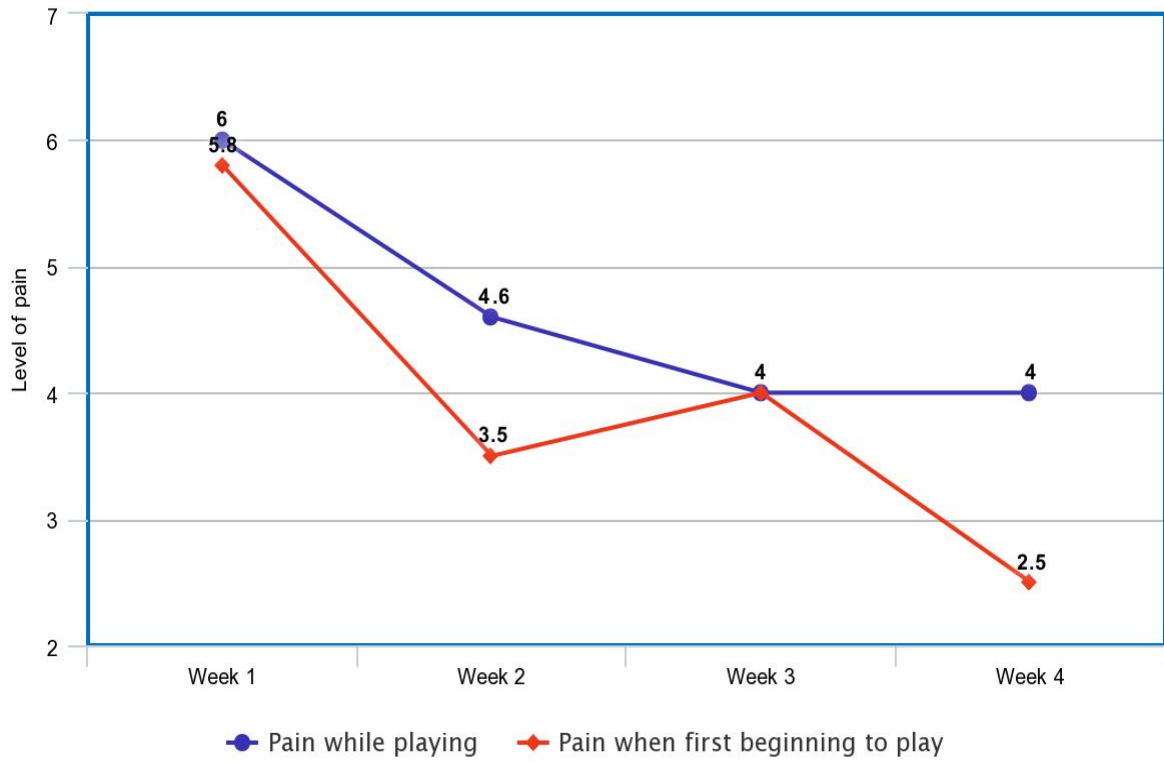
10. Conversely, the average amount of pain felt while playing in the experimental group was 4 out of 10, and the average amount of pain when first beginning to play was 4 out of 10.

Week four: In the final week we see a slight fluctuation in the patterns of both groups, however we can still see the distinct difference between the groups. The average amount of pain experienced while playing in the control group was 5.2 out of 10, and the average amount of discomfort felt when first beginning to play each day was 7.4 out of 10. Conversely, the average amount of pain felt while playing in the experimental was 4 out of 10, and the average amount of pain when first beginning to play was 2.5 out of 10.



meta-chart.com

Experimental



meta-chart.com

Regarding the teacher survey, twenty-one subjects responded to the survey. Below are the results:

In response to the first prompt “Do you believe that warm-downs are effective?” 100% of those surveyed responded yes.

In response to the second prompt “Do you use warm-downs in your personal practice/playing?” 23.81% responded always, 33.33% responded often, 38.10% responded sometimes, and 4.76% responded never.

In response to the third prompt “have you ever used warm-downs with any of the ensembles that you have taught or worked with?” 14.29% responded always, 38.10% responded often, 28.57% responded sometimes, and 19.05% responded never.

In response to the fourth prompt “do you believe warm-downs are necessary?” 61.90% responded yes, 19.05% responded no, and 19.05% responded other. Those who responded “other” were asked to specify their responses, below are their answers:

“Necessary in certain contexts. "When one is playing, how often one will play that day, if the nature of practicing is geared towards range building, etc..."

“Not always. Depends on the practice session.”

“More necessary in practice than in rehearsal or performance.”

“It varies from person to person, but an ensemble-wide warm-down can help students that need it.”

In response to the fifth prompt, “Have you ever experienced pain while playing” 66.67% responded yes, 28.07% responded no, and 4.67% responded other.

In response to the seventh prompt, “what type instrument do you play?” 90.48% responded that they were brass players, 4.76% responded that they were woodwind players, and 4.76% responded that they were percussionists.

CHAPTER V

CONCLUSION

While there is a wealth of literature available on embouchure injuries and general embouchure maintenance, the amount of literature that specifically addresses warm-downs is almost nonexistent. One possible explanation is that many band directors who are not brass players, in the same way brass players might not fully understand hand injuries that percussion players sustain or the problems that woodwind players experience, do not fully grasp the physical demands that affect many of their students who play brass instruments.

Upon reviewing the results of the study, though the number of students was small and the duration of the study was limited, the results of the weekly survey seem to suggest that the warm downs were somewhat effective in lowering the amount of pain experienced. In order to make the two groups as equal as possible, I attempted to have equal numbers of different types of brass instruments in both groups. This was vital in order to have an even number of the same sized mouthpieces in each group, as different sizes of mouthpieces can create different types of pressure on the embouchure and therefore create various amounts of pain. A consequence of this, however, is that I was not able to make the two groups equal in terms of the amount of time spent playing. On average the control group spent 1.67 hours playing daily, while the experimental group spent an average of 3.06 playing daily. The fact that we still see a correlation between

warm-downs and lower rates of pain despite this difference is a very reassuring sign, potentially, to the effectiveness of warm-downs.

The goal of the secondary survey was to provide a greater insight in to the use of warm-downs among band directors, in order to lay the foundation for a later, more large-scale, study. Not surprisingly, brass players seemed to have the most interest in participating in the study. It seems apparent through the responses that warm-downs are an active part of many instrumental classes, at least in places where a brass player is director. This makes the complete lack of literature dealing directly with the activity even more surprising. It seems apparent that this subject that was in need of study.

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