The use of *bel canto* techniques to develop healthy vocal techniques in adolescent singers who *belt*

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TO WHOM IT MAY CONCERN

This is to confirm that I assisted Ms MARGUERITE VAN WYK with the language editing and proofreading of her MMus thesis (University of Potchefstroom), while she was preparing the manuscript for submission. The title of the thesis is **THE USE OF BEL CANTO TECHNIQUES TO DEVELOP HEALTHY VOCAL TECHNIQUES IN ADOLESCENT SINGERS WHO BELT**.

I went through the paper making corrections and suggestions with respect to language usage, and followed up further enquiries on the paper. Given the nature of the process, I did not see the final version and I restricted my editing to language issues, but I remained available for consultation as long as necessary.

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DEDICATION

This study is dedicated to my grandfather, Lucas, who bought me my first piano. My parents, Johan and Miemie, and parents-in-law, Roelof and Felicity, who have been a constant source of support and encouragement in my life. Also my sister and brothers; I am truly grateful for having them in my life.

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ABSTRACT

Competitions such as *Idols*, *The Voice*, *The X Factor* and *America’s Got Talent* inspire many adolescent singers to venture into the world of the performing arts. Mastering the art of belting is necessary for singers who want to perform contemporary commercial music. However, there are some experts who warn that, if not applied carefully, this technique might damage the voice, especially the young adolescent voice that is still not fully developed. The *bel canto* technique is used by singers who perform Western art music at relatively high intensity for extended periods of time (as in opera performance), while maintaining vocal health and longevity. The researcher followed a qualitative research design and set the research within an interpretive/constructivist paradigm. The purpose of this conceptual study on which this research report is based is to explain how *bel canto* techniques might be used to develop healthy vocal techniques in adolescents who want to belt. Data were collected by systematically scrutinizing the literature on the main concepts, namely the adolescent voice, *bel canto* and belting. The data were subjected to coding in order to determine categories and sub-categories. Based on the analysis of the data, the research report argues that adolescents who want to perform contemporary commercial music using the belting technique might benefit from first mastering the breathing process, as well as the vowel formation used in *bel canto*. Once they have an understanding of how it feels to sing in a way that feels more natural, they can begin to attempt the belting technique, which requires more muscular activity.

**Key words:** adolescent voice; *bel canto*; belting; diaphragmatic-intercostal breathing; *Castrati*; *chiaroscuro*; *legato*; vocal embellishments; vibrato; vowel formation.
OPSOMMING

Kompetisies soos Idols, The Voice, The X Factor en America's Got Talent inspireer menige adolessente sangers om ‘n loopbaan te volg in die uitvoerende kunste. Dit is noodsaaklik vir sangers om die tegniek van belting te bemeester as hulle kontemporêre kommersiële musiek wil sing. Daar is egter sommige deskundiges wat waarsku dat die tegniek skadelik kan wees vir veral die adolessente stem wat nog ontwikkel, indien dit onverantwoordelik gebruik word. Die bel canto tegniek word gebruik deur sangers wat Westerse kunsmusiek uitvoer wat gekenmerk word deur ‘n hoë intensiteit (soos in opera), oor ‘n uitgebreide tyd, terwyl goeie gesondheid en tegniek van die stem volgehou word. Die navorser het ‘n kwalitatiewe navorsingsontwerp gebruik en die navorsing binne die interpretatiewe/konstruktiewe paradigma geset. Die doel van hierdie konseptuele studie waarop die hele navorsingsverslag gebaseer is, is om te verduidelik hoe bel canto tegnieke gebruik kan word om gesonde stem tegnieke in adolessente te verseker wat wil belt. Data is versamel deur noukeurige ondersoek van die literatuur van die hoof konsepte, naamlik die adolessente stem, bel canto en belting. Die data is aan kodering onderwerp sodat kategorieë en sub-kategorieë bepaal kon word. Gebaseer op analise van die data bevind die navorsingsverslag dat adolessente wat kontemporêre kommersiële musiek wil sing deur gebruik te maak van die belting tegniek, daarby sal baat deur eers die asemhalingsproses en dan die vokaalvorming, wat tegnieke is van bel canto, te bemeester. Eers nadat hulle goeie begrip en gevoel verkry is van hoe dit voel om gemaklik te sing, kan hulle die belting tegniek aanwend, aangesien dit meer spieraktiwiteit vereis.

Sleutelwoorde: adolessente stem; bel canto; belting; diafragmatiese-tussenrib asemhaling; castrati; legato; ornamentasie; vibrato; vokaalvorming.
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CHAPTER 1: INTRODUCTION

This research project explores how bel canto techniques can be used to develop a healthy vocal technique in adolescent\(^1\) singers who belt when singing non-classical music (henceforth referred to as contemporary commercial music\(^2\)). Dufault (2008:23) points out that the term bel canto, a style that originated in the Baroque era and continues even in the 21\(^{\text{st}}\) century, represents the technique used by trained singers who specialize in Western art music. Singers who perform popular music use a technique known as belting. Hoch (2014:24) describes belting as referring to “a style, register, and technique used by singers who perform in non-classical styles”. He also points out that this style of singing involves a “kind of intense vocal production that allows the voice to carry easily but does not have the characteristics of a classical sound” (Hoch, 2014:211). Surmani and Mitchell (1997:41) explain that belting entails the chest voice being pushed up into the head voice as far as possible.

1.1 Research problem

Barlow and Howard (2002:67) state that, “during the pubertal growth spurt, both male and female larynxes change dimensions rapidly”. Many adolescent singers enjoy singing popular music and use belting when performing this style of music. Furthermore, adolescents who perform are subjected to aspects of singing which “include melodic accuracy, auditory memory and voice quality” (Smith-Vaughn et al., 2013:404). While these aspects do not in themselves cause harm, the effort to obtain such accuracy and quality might include harmful techniques. Surmani and Mitchell (1997:41) warn that this style of singing might damage one’s voice if not learned properly. During adolescence, young singers’ voices are extremely vulnerable. Therefore, the problem is that such young voices might be

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\(^1\) Sacks (2003:577) describes an adolescent as a young person between the ages of 10 and 19 years. This is a broad definition as adolescence is usually considered to be the period from the normal onset of puberty until adulthood. Thurman and Klitzke (1994:227) believe that adolescents can be categorized in groups from early (12 to 15 years), middle (15 to 18 years) and late adolescence (18 to 21 years).

\(^2\) Hoch (2014:57) uses the phrase contemporary commercial music (CCM) to categorize music written since 1949, including “musical theatre, rock, pop, country, jazz, blues, R&B, gospel, world music”. 
damaged permanently if the singers use a technique that causes tension in the vocal folds.

Thurman and Klitzke (1994:243–244) explain voice management skills that singers who belt need and which can prevent voice disorders; such skills include developing and maintaining a well-conditioned head register, methods of voice care and protection, general body conditioning and laryngeal muscle conditioning. Stark (2003:86) points out that, since there are belt singers who have endured long healthy careers, there seems to be a gap in the research about the positives and negatives of belting.

Voice teachers have to take great care to protect these young voices and ensure vocal health during the teaching-learning experience; teaching, learning and using the belting coordinates (physiological and acoustic characteristics). The music selected by teachers for adolescents plays a big role in vocal health (Smith-Vaughn et al., 2013:404) and, therefore, it is the responsibility of the voice teacher to ensure that the young singer who wants to sing popular music learns to maintain a healthy vocal technique to prevent voice disorders later in their careers.

1.2 Literature overview

As mentioned in the introduction, the main concern of this research is the vocal health of adolescent singers who want to sing contemporary commercial music (CCM). Therefore, it is necessary to consider aspects of the adolescent voice discussed in the literature. Cooksey (1992:17) indicates that voice change in adolescents is to be expected. Specific criteria define the vocal character at various stages, amongst which tessitura, range, register development, voice quality and the speaking voice.

For the purpose of this study, a distinction is made between literature overview and literature review. The literature overview offers a broad overview of literature about the concepts that the study will explore, while the literature review is regarded as a method for data collection. Onwuegbuzie and Freis (2016:49) argue that a “literature review process can be viewed as a data collection tool – that is, a means as collecting a body of information pertinent to a topic of interest”.

2
According to Skelton (2007:538), the anatomy of children’s larynxes is very similar regardless whether they are male or female. It is only during puberty that the first differences are noticed. According to Kahane (1982:452), a study of the larynxes of both male and female adolescents showed results with significant growth of the outer surface of the thyroid cartilage. The increases in the size and weight of the laryngeal cartilages were greater in male adolescents than in female adolescents.

Hormones play a major role in the changing voice during puberty. The main sex hormones for females are oestrogen and progesterone, while testosterone is the main sex hormone for males (Chapman, 2006:69). The principal sex hormones that influence the adolescent’s complete physicality produce measurable growth of the vocal mechanism. The significant increase of the vocal fold length is greater in males than females. Kahane’s data illustrate that the male vocal folds lengthened by 63% (11.56 mm) from prepuberty to puberty, whereas the female vocal folds lengthened by only 34% (4.18 mm) during the same period (Kahane, 1982:453). This development in males is noticeable in what is commonly known as the Adam’s apple (Davids & LaTour, 2012:201). During puberty, another hormone is released in male adolescents. This hormone is known as androgen and it lowers the voice frequency by up to an octave (Schiff, 1999:424). These involuntary changes that the lowering of frequency brings about in the vocal registers seem to require a great adaptation from young male singers (Smith-Vaughn et al., 2013:204).

The combination of oestrogen and progesterone in the adolescent female voice leads to the lowering in pitch of a third (Schiff, 1999:424). Voice transformation in the female voice, is one of the several signs of female puberty (Thurman & Klitzke, 1994:239). Thurman and Klitzke (1994:239) state that the changes in the female voice change is characterized by the speaking voice being lower, some breathiness in the sound, voice cracking, register breaks, decreased pitch and strenuous singing with heavier, rougher voice qualities (Thurman & Klitzke, 1994:239).

Benninger et al. (2015:78) point out that, because of the changes during adolescence, young singers “place additional strain on their voice and larynx, resulting in maladaptive vocal behaviours”. Thurman and Klitzke (1994:243) assert that “there are
limits to the number of forceful collisions that the vocal folds can take before they will react to protect themselves”. They also point out that the head and neck muscles can take only a limited amount of strain “before some symptoms of vocal fatigue syndrome begin to appear” (Thurman & Klitzke, 1994:245). By using the belting technique during singing, the potential harm to a voice might occur due to the muscles involved in the chest register which continues to contract (Davies & Jahn, 2004:63).

According to Thurman and Klitzke (1994:241–243), clinical information supports their belief that there are voice professionals, teachers and educators who believe that belting can potentially harm a voice, particularly voices of young children and adolescents. However, not all scholars necessarily consider belting to be harmful. Popeil (2007:77) compares the character of belting to that of speech or shouting. While she cautions that the folds should not bear too much pressure during belting, explaining that there is a “fine line between closed and pressed folds” (Popeil, 2007:78), she also asserts that this sound that emulates normal speech can be produced with comfort and ease to the upper range of the voice by both male and female singers. Other scholars offer advice for maintaining suitable vocal hygiene, such as “proper warm-up exercises, hydration, diet, and voice rest” (Benninger et al., 2015:78), measures that contribute to a healthier singing voice, especially for the young or adolescent singers but also for the professional seasoned singers.

1.2.1 Bel canto

There is a significant body of literature that relates to the nature, the history and technical aspects of bel canto singing. The term bel canto can be translated as beautiful singing. Stark (2003:204–205) describes the 17th century as the first golden age of singing, in which this Italian vocal style, associated with the “flowering of vocal lyricism”, began and continued to develop through the eighteenth century (Duey, 2013:5). Toft (2013:3) asserts that “the principles governing this re-creative style of singing were well-known in the late eighteenth and early nineteenth centuries”. Chapman (2006:15–16) writes that the teaching of singing in previous centuries entailed informally passing on information, as well as producing some written discourses on vocal pedagogy. An example of such a written work is that by Manuel
Garcia (1805–1906), who offered insight into the vocal arts; insight that to this day still informs our understanding of vocal technique.

Ware (1997:250) states that, by the turn of the 17\(^{\text{th}}\) century, important vocal trends shaped the development of singing. These trends included the rise of the professional opera singer – especially the *castrati* – and the formation and spread of *bel canto*, an Italian style of singing that requires the singer to control the voice, as well as develop vocal embellishment.

Toft (2013:3) points out that two hundred years ago performers had the privilege of employing their own creative techniques to help shape the music that was written. These techniques are known as “the fundamental components of the old Italian *bel canto* style”, and singers succeeded in conveying emotions of the heart to the audiences (Toft, 2013:3). This were achieved through the use of specific techniques. The music scores were personalized by the singers who introduced more free lines into the melody and incorporated bigger as well as smaller changes (Toft, 2013:3). Therefore, performers regarded the written music as the basis for re-creation (Toft, 2013:3).

The Old Italian School in which the *bel canto* technique was prominent was established in the early Baroque era and was informed by the development of the virtuoso singers who had superior vocal skills (Stark, 2003:189). According to Miller (2000:110), two poles of *bel canto*, namely agility (flexibility) and *sostenuto* (sustain), complement each other. Duey (2013:4) states that the reason for investigating the two fundamental principles of *bel canto*, namely great technical skill and a pleasing sound, is that they still remain among the prime requisites of good singing today (Duey, 2013:4).

Duey (2013:5) specifies the *bel canto* era as the “period when the art of singing became epitomized into a style and a technique that set the model for correct singing throughout the Western World”. We now relate the *bel canto* style of singing to what is required to sing Western art music (Chapman, 2006:17) and contemporary vocal pedagogy in Western art music is based on the technical skills necessary to perform the *bel canto* style.
Duey (2013:172) describes the methods of *bel canto* as unassuming and straightforward. Singers were expected to have natural talent and were taught by their teachers or by other successful artists to sing without corporeal tension (Duey, 2013:173). Another characteristic of the *bel canto* technique is “the close relationship between speaking and singing” (Toft, 2013:45). This dialectical relationship created a style of singing which was highly articulated. Because the technique evolved from the Italian methods of singing, the articulation of the vowels is based on the vowel production of the five basic Italian vowel sounds, namely [a] (as in rather), [e] (as in a fied), [i] (as in meat), [o] (as in floor) and [u] (as in loot) (Gregg, 1995:59). Furthermore, Stark (2003:189) refers *bel canto* as a style of singing that consists of special characteristics, namely “*legato, portamento, glottal articulation, crescendo, messa di voce, floridity, trills and tempo rubato*”.

Stark (2003) takes into account two technical matters when referring to the term *bel canto*. The first concerns the refined method of the interaction between the “glottal source, vocal tract and the respiratory system” (Stark, 2003:189). This interaction creates the qualities of *chiaroscur* (contrasting effect between light and dark timbres), *appoggio* (a specific type of breath management) and register unification (adjusting the balance between the chest and head registers) and also a vibrato that is pleasing (Stark, 2003:189).

### 1.2.2 Belting

The vocal technique that sometimes involves the loud chest voice to be forced up into the head register is known as belting (Smith, 2007:128) and is commonly used when singing contemporary commercial music, as well as works from musical theatre. Popeil (2007:77) writes that the term belting comes “from the slang term for ‘wallop’”, which means to deliver “a hard blow as in boxing”. Belting originated as a stage-singing technique.

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4 The main components of the vocal tract are the mouth, the oral pharynx (throat) and the larynx (Davids & LaTour, 2012:65). The vocal folds are situated inside the larynx and great damage can be done with “improper vocal technique and harmful health habits over time” (Davids & LaTour, 2012:45).

5 Chest register (voce di petto) is “typically the speaking voice and also the yelling voice”. Physical vibrations in the chest cavity are felt when one forms sound in that register (Ware, 1997:115).
technique adopted for classical Broadway musicals (Smith, 2007:128). According to Ware (1997:8), a belting sound, characterised by low and husky tones, is associated with contemporary commercial music like gospel, rock and roll, and country music. He suggests that the origin of this style lies with “black gospel singers and black blues vocalists associated with New Orleans jazz at the turn of the century” (Ware, 1997:8). Edwin (2007:213) suggests that “belt slowly is gaining credibility as a viable and legitimate vocal art form worthy of medical and scientific study, pedagogic support, and critical artistic review”. Surmani and Mitchell (1997:41) are of the opinion that the majority of voices have the ability to belt to some extent.

This style of singing is different from that of the bel canto vocal production in Western art music (Bonin, 2009:2). The differences between the two styles are related to, for example, the vocal tract, the breathing process and vowel formation. White (2011:23) states that “the airflow rate in belt is significantly slower than it is in classical singing”. This slower rate of airflow results in comparatively higher closed quotients, which refers to the duration of the vibratory cycle in which the vocal folds close the glottis. The proper place of the larynx in belting is neutral. This neutral placement, in combination with the registration of speech, leads to an unaffected process (White, 2011:23). The shape of the mouth is generally wider in belting and “vowels require modification in the open direction, for instance [I] will gravitate towards [e]” (White, 2011:24).

Popeil (2007:78) points out that there are various styles of belting, such as “heavy belt, nasal belt, twangy belt, brassy belt and speech-like belt”. Each type of belting has the potential to communicate particular traits. An authentic belt is described as a “healthy, balanced sound that is fully viable musically and is a technique that can withstand the rigors of a career” (White, 2011:23). Heavy belting, for example, can help depict a character who is a bit older, while nasal belting elicits perceptions of conviction. Twangy belting tends to contribute to comedic characteristics and brassy belting can imply confidence. Speech-like belting is natural, sincere and pleasant to listen to (Popeil, 2007:77). Davids and LaTour (2012:57) explain that “raw belting involves continued exclusive use of the thyro-arytenoid muscles as pitch ascends – with very little/no use of the stretching/thinning muscles (cricothyroid muscles)”. This consistency in the cricothyroid muscles is the result of maintaining the high position of
the lower register, commonly known as the chest voice (Davids and LaTour, 2012:57). Thus maintaining the physical characteristics of the low register when moving towards and into the high register. Davies and Jahn (2004:64) believe that one can take some precautions to avoid vocal damage by merging the upper chest voice with the head voice, which also will produce a different sound.

According to Davids and LaTour (2012:57), “belting is a controversial subject in vocal pedagogy”. Davies and Jahn (2004:64) state that “it is still debatable whether truly safe belting can be achieved”. They suggest that intermittent belting should be combined with “classical techniques of respiration and relaxation” (Davies & Jahn, 2004: 64).

1.3 Purpose statement

The purpose of this conceptual study was to understand how bel canto techniques in singing can be used to develop healthy vocal techniques in adolescent singers who belt.

1.4 Research questions

The main question of this research project was: How can bel canto techniques be used to develop healthy vocal techniques in adolescent singers who belt?

Three sub-questions stem from this main question:

- What are the characteristics of the adolescent voice?
- How can the qualities of bel canto and belting techniques be described?
- What are the differences and similarities between bel canto and belting?

1.5 Research design and methods

Mouton (2001:55) regards a research design as “a plan or blueprint on how you intend conducting the research”. A research design is necessary at the beginning of one’s research in order to prepare with logical exactitude (Gorard, 2013:3). Gorard (2013:3) refers to elements such as the “case studied, their allocation to sub-groups, the timing and sequence of data collection, and day interventions” in the research designs. He
explains that it is important to think in advance about the conclusions you would want to reach (Gorard, 2013:3). Creswell (2009:xxii) defines three research designs, namely quantitative, qualitative and mixed methods research. He explains that these preparatory designs consist of at least three very important components, namely “philosophical assumptions, strategies of inquiry and specific research methods” (Creswell, 2009:xxii). The chosen research design for this research project is qualitative research.

1.5.1 Qualitative research

According to Creswell (2013:34), qualitative research is a way to explore and understand the relationship between an individual or a group and the social issues they encounter. The process involves and reveals the questions that were asked, the methods that were used, the data that were collected by the researcher and then the data analysis. The role of the researcher is to interpret the significance of the data (Creswell, 2013:34). Henning (2004:4) adds that “in a qualitative study the ‘variables’ are usually not controlled because it is exactly this freedom and natural development of action and representation that we wish to capture”. Henning (2004:4) also discusses the way in which an argument can be understood and explained based on the data that was collected from the literature.

In this research study, I followed the guidelines indicated by the authors mentioned above. I posed the questions and sub-questions that needed to be answered (see 1.4) in order to fulfil the purpose of the study. I discuss the methods used to collect and analyse the data in more detail under 2.4 below.

1.5.2 Strategy of inquiry

This research project used a conceptual study as its strategy of inquiry. The main characteristic that defines a conceptual study is that it generates new theoretical or practical knowledge and understandings of existing concepts (Nieuwenhuis, 2007:71). This knowledge and understanding are obtained by studying additional sources (Nieuwenhuis, 2007:71). Using the definition of a conceptual analysis as stated, I compared two concepts, namely bel canto and belting. While I was aware of
fundamental differences between the two techniques, I anticipated that I might find similarities in the course of the research. I believed that, by understanding the differences and similarities, it might be possible to use the pedagogical principles adopted from bel canto singing that ensure vocal health and sustainability to negotiate the same for adolescent singers who belt. Therefore, the focus of the conceptual study was on how bel canto techniques could be used to develop healthy vocal techniques in adolescent singers who belt.

1.5.3 Paradigm

Nieuwenhuis (2007:47) describes a paradigm as “a set of assumptions or beliefs about fundamental aspects of reality which gives rise to a particular world-view”. Henning (2004:3) describes a paradigm in qualitative research as a “quest for understanding and for in-depth inquiry”. Merriam (2009:11) uses the phrase epistemological perspectives as a framework for research – a concept similar to paradigm. One of the epistemological perspectives that Merriam (2009:11) describes is the interpretive/constructivist perspective. She claims that the purpose of an interpretive/constructivist perspective is to allow the researcher to describe, understand and interpret the concept or phenomenon after having analysed the collected data. This perspective is context-bound and allows the researcher to consider multiple realities (Merriam, 2009:11).

As stated earlier, the purpose of this conceptual study was to understand how the bel canto technique of singing could be used to develop healthy vocal techniques in adolescent singers who belt. The chosen perspective allowed me to consider multiple realities (contexts), namely those of Western art music and CCM, as well as vocal pedagogy. The term Western art music commonly refers to classical music, which includes genres such as art songs, oratorios, operas and chamber music (Hoch, 2014:53, 54). For the purpose of this research study, I use this term to designate the concept of classical music. As mentioned earlier in the proposal, CCM refers to genres such as musical theatre, rhythm and blues (R & B), rock music and jazz. The study of the vocal techniques required to perform the various genres within these contexts will lead me to consider another context, namely that of vocal pedagogy.
1.5.4 Research methods

1.5.4.1 Data collection

Researchers collect data in various ways, for example, through questionnaires, interviews, checklists, observations, internet searches and consulting documents such as case records and scholarly sources. Merriam (2002:13) discusses written documents as sources that contain data case records, for example, public or individual documents that are available to the researcher (Merriam, 2002:13). According to her, the researcher can also write, make recordings or take photographs – all of which can be regarded as primary sources. Researchers can also visit specific spaces to observe the behaviour of individuals where they share information in an open manner (Creswell, 2014:17). These spaces can also serve as sources of observation of human experience, such as observing vocal performances at concerts.

For the purpose of this research study, I collected data on the adolescent voice during the mutational phase, the bel canto style and technique with its established methods, and finally belting, a style that is increasingly being acknowledged in academic circles. The two main concepts in this research project, namely bel canto and belting are best described in books and articles written by specialist scholars in vocal technique, such as Bonin (2012), Christy (1975), Duey (2013), Garcia (1894), Mane’n (1974), McKinney (2005), Stark (2003), Surmani and Mitchell (1997) and Toft (2013). The data for this research project were gathered from various sources, such as scholarly books and articles. The keywords which were used for the search included ‘adolescent voice’, ‘bel canto’ and ‘belting’.

At first I read through sources that best relate to the keywords used during searches on JStor, IIMP, Sabinet, Google Scholar etc. – traditional literature review. After having collected a sufficient number of sources, I continued with a systematic literature

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6 Jesson et al. (2011:74) describe the traditional review as a summary of the existing knowledge which adds new insights on a specific topic.
I used specific criteria to systematically sort through the sources I found during the traditional literature review in order to narrow the focus to sources that

- are the most relevant in their discussions of the adolescent voice, bel canto and belting;
- were written or produced by scholarly experts;
- have been peer-reviewed; and
- testify to more recent research that was conducted on the concepts involved in this study.

During the initial search for sources, it was noticeable that many of the bel canto sources are much older than the sources about belting, which were mostly published after 2000. The recentness of these sources reflects the relevance of this style of singing (belting).

Once the data for this study have been gathered, I made my own interpretations through analysis and clarification of the integral results from the research and data (Creswell, 2014:17). Ultimately, the data collection and the data analysis were intertwined during the research process.

### 1.5.4.2 Data analysis

Data analysis is part of the execution stages after the data collection (Terre Blanche, 2006:34). Data analysis in qualitative research is an emergent process during which the data should be organized, reduced and described (Henning et al., 2004:127). This kind of analysis can help with adjustments or can redirect data and it allows the researcher to test “emerging concepts, themes, and categories against subsequent data” (Merriam & Tisdell, 2016:14). According to these two authors (2016:297), the data analysis of a qualitative research project is inductive and comparative, which allows patterns, themes and categories to emerge from the data. Merriam and Tisdell

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7 A systematic literature review involves systematically and conscientiously sifting through a large quantity of literature, using specific criteria and following a transparent process (Jesson et al., 2011:104).
(2016:221) summarize data analysis as the process of “making sense out of your data”. Creswell (2013:227) suggests that the researcher should devote specific attention to the steps in data analysis, as this will determine the building blocks to arrive at the conclusions.

In this research project, I used conceptual analysis to analyse the data that I had collected. Petocz and Newbery (2010:126) describe conceptual analysis as an analysis of “concepts, terms, variables, constructs, definitions, assertions, hypotheses, and theories”. The list should be applied, using clear thinking and critical relations that are logical, in order to identify suppositions and inferences. I used coding and categorizing while analysing my data.

1.6. Role of the researcher

Creswell (2013:207) describes the role of the researcher as the “primary data collection instrument” necessary in qualitative research. In this research study my own personal point of view is part of the research setting. My perceptions of singing in a classical style have been shaped by my personal journey as a performer and a vocal coach. These perceptions informed the way in which I conducted the research.

1.7 Trustworthiness

It is the responsibility of the researcher to ensure that the process of the research should be “systematic, rigorous, credible and as reliable as possible” (Atkins & Wallace, 2012:51). By accepting this responsibility, the research can benefit education through advancing more positive understanding (Atkins & Wallace, 2012:51). Lincoln and Guba (1985:289ff.) discuss four questions in connection with trustworthiness, namely questions about truth value, applicability, consistency and neutrality and conclude that trustworthiness relates to “internal validity, external validity, reliability and objectivity” (Lincoln & Guba, 1985:290). According to Lincoln & Guba (1985:300), prolonged engagement, peer debriefing, negative case analysis, referential adequacy, member checks, transferability and audit trail are techniques a researcher can use to ensure credibility.
In this dissertation I used the following techniques to ensure credibility (Lincoln & Guba, 1985:304, 308, 316):

1. Because of the many years that I have been involved with singing, both as a performer and teacher, I can claim that I have been engaged with the topic for a prolonged period of time. I have also persistently observed adolescent singers (YouTube videos and television programmes); this means I have gained sufficient experience to achieve the purpose (which builds trust) and depth (as a result of the persistent observation);

2. Peer debriefing – this is a process which submits the researcher’s work to questions and inquiry from a fellow academic collaborator. This will help to keep the researcher trustworthy.

3. Transferability – this entails thick description of the data, through gathering a wide range of information and sampling.

I also relied upon crystallization, a process which provides a different path to achieve depth in the details of the research study by a compilation of many details, using “different forms of representing, organizing, and analysing those details” (Ellingson, 2009:10).

1.8 Ethical considerations

Since this research does not involve any participants other than the researcher, no ethical issues relating to the protection of other participants were anticipated. However, I acknowledge the need for ethical integrity throughout the research process so that the research report is reliable and valid.

1.9 Structural design

Chapter One serves as an introduction to the research project; it explores how the bel canto technique can be used to develop a healthy vocal technique in adolescent singers who belt when singing CCM. The chapter states the problem that necessitated the research and provides a brief overview of the literature about the adolescent voice, as well as about the main concepts, namely bel canto and belting. Furthermore, the
The chapter states the purpose of the research and discusses the research design and methods. It explains the research approach, the research paradigm, the strategy of inquiry and the methods used to collect and analyse data. The chapter concludes with a short declaration on how the research complies with ethical requirements and how trustworthiness is ensured.

The discussion in Chapter Two provides a review of the literature on the adolescent voices of both genders. It explores the physical changes that take place due to rapid growth and hormonal changes during the transitional phase of the adolescent voice. The literature on the origins and characteristics of the bel canto style and technique is also examined in the chapter. The characteristics that are discussed include the breathing process, legato and coloratura singing, vocal embellishment, vibrato, chiaroscuro, register unification and vowel formation.

The concept of belting as a technique used when performing CCM is discussed in Chapter Three. Specific characteristics of the breathing process, the laryngeal position, vowel formation, use of the registers, vibrato and embellishment are discussed, along with warnings about the possible dangers of belting.

Chapter Four presents the coding and categorising of the data. The codes and categories are presented in tables, each pertaining to one of the main concepts. A comparison between bel canto and belting is also presented in a table.

The article that constitutes the ultimate research report of this study is presented in Chapter Five. In this article the main concepts are briefly explained and a comparison between bel canto and belting is made. The chapter then discusses how it might be possible to use some of the bel canto techniques to develop the young adolescent voice in a healthy way.

Chapter Six concludes this research study and offers some suggestions for further studies.
CHAPTER 2: LITERATURE REVIEW

This chapter considers the nature of the adolescent voice, seeing as this is the age group with which this research study is concerned. It addresses the physical development of the male and female adolescent voice, as well as the different hormones which play a role in the difference between male and female voices. The chapter also offers an insight into the concept of bel canto together with the important role the castrati played during the early bel canto era. A discussion of the characteristics of the bel canto technique, enhanced with examples, will provide an insight into what bel canto singing entailed.

2.1 The adolescent voice

Sacks (2003:577) describes adolescence as the beginning of a normal physiological puberty which will end with the onset of adulthood. In general, it can be argued that adolescence occurs between the age of 10 and 19 (Sacks, 2003:577). Thurman and Klitzke (1994:227) refine Sacks’s description in that they categorize adolescence into three phases, namely “early adolescence (12 to 15 years), middle adolescence (15 to 18 years) and late adolescence (18 to 21 years)”. Thurman and Klitzke (1994:227) suggest these groups as ranges of age, chronologically under the overarching term “the young”. They believe that the larynx\(^8\) and the anatomy of the vocal tract\(^9\) supposedly reach adult measures at the age of 20 to 21 years. The adolescent’s most

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\(^8\) The larynx is one of three elements comprising the structure of the voice, namely the “breathing mechanism, the larynx and the vocal tract” (Miller, 2004:56). Miller (2004:56) points out that these elements work together in an integrated manner. The laryngeal mechanism is embedded in a space made of cartilage surrounded by two powerful muscles known as the sternocleidomastoid (Miller, 2004:56). These muscles are further sustained by a combination of muscles which functions within this interconnected system (Miller, 2004:56). The muscles situated at the back of the neck sustain the larynx during demanding singing (Miller, 2004:56). Miller (2004:56–57) describes the position of the larynx as remaining steady, without going up or descending when the tone changes or when the singer takes a new breath and warns against a posture where the chin is lifted, because this posture instantly lifts the laryngeal mechanism.

\(^9\) The vocal tract is located above the glottis and functions as a system for resonance (Miller, 2004:63). Miller (2000:15) further describes the vocal tract as a resonating cylinder that is a pliant and malleable structure. The vocal tract reacts to the verbal expressions which are needed for speech and singing (Miller, 2004:63). This reaction to the vibrating larynx allows for the possibility that the timbres of the voice can be manipulated (Miller, 2004:63).
sensitive period regarding vocal development is during the rapid growth during puberty (Smith-Vaughn et al., 2013:405). Barlow and Howard (2002:67) state that during adolescence a child’s voice develops dramatically with great changes in the vocal system. During this time many young singers sing as much as adults (Barlow & Howard, 2002:67). Friar (1999:28) suggests that the mixed children’s choirs that have emerged over the last five decades have led to the new interest in studying the changing is voices of both genders. He believes that the voice teacher should guide adolescents on the basis of a sufficiently researched education about contemporary music in order to facilitate the voice’s transitional or mutational phase. He points out that McKenzie (1956), Cooper (1970), Cooksey (1992), Gackle (1991) and Philips (1992), all well-known researchers in this field have made valuable contributions and observations towards understanding the changing adolescent voice over the last 50 years (Friar, 1999:26).

There is consistent growth of the vocal tract, combined with the associated muscles, during adolescence (Cooksey, 1992:37). Barlow and Howard (2002:27) assert that both male and female singers’ laryngeal mechanisms undergo changes quite quickly. However, there are distinct differences in the physiological characteristics of the male and female laryngeal mechanisms, as well as their vocal ranges.

Cooksey (1992:12) describes the active phase of voice change as occurring between the age of 12.5 and 14 years. The stages to maturity include changes in the vocal range, the tessitura, the quality of the voice, the development of the registers and the fundamental frequencies of the speaking voice (Cooksey, 1992:12). Cooksey (1992:12) describes the voice change of an adolescent boy as “predictable, sequential, but sometimes erratic process which generally takes place over a period of one to two years”. He explains that the voice change occurs gradually as “vocal folds thicken and lengthen, ligament and laryngeal cartilages develop, and vocal tract expansion takes place” (Cooksey, 1992:12).

According to Cooksey (1992:7), most present-day researchers agree that the majority of adolescent girls experience quite a few changes during singing. Before the change begins, the adolescent female’s voice has the quality of a child soprano, which can be
identified as light, without register breaks, which resembles the sound of a flute (Cooksey, 1992:83). Because of the female's voice being lighter, the volume will be less than that of the male singers (Cooksey, 1992:83). All these changes lead to lower pitches of the voice (Davids & LaTour, 2012:201). At the onset of the transitional phase, the female voice can suddenly change due to the frequency of the voice lowering by 3 to 4 semitones.\(^{10}\) The sound of the voice can start to sound breathy or husky with a hoarseness and with “voice cracking” and observable “register breaks” (Cooksey, 1992:7). Diminishing and unstable pitch ranging abilities will make it difficult for the female adolescent to produce the perfect pitch and there seems to be a problem with the onset of phonation (Cooksey, 1992:7). The changing voice of the female can be described either as a heavy, rough quality, or a thin, breathy quality which lacks colour (Cooksey, 1992:8).

Kahane (1982:449) measured the height, width and the length of the thyroid and cricoid cartilages during the growth of the larynx in both male and female adolescents. She found that the increase in growth of the thyroid and cricoid cartilages was 2 to 3 times greater in male than in female adolescents (Kahane, 1982:449). Kahane’s (1982:450) measurements for the growth of the vocal folds were 11.56 mm (63%) for male and 4.16 mm (35%) for female. Thus it is clear that the increase of the vocal folds’ length, like the growth of the thyroid and cricoid cartilages, is much greater in male adolescents than female adolescents; something that manifests as the so-called Adam’s apple.

The natural vocal range is difference in boys than in that of girls. According to Celetti (1996:108), the natural voice range of a boy is known as the chest voice. The large number of notes from B-flat\(^4\) to D\(^5\) or E\(^5\) suggests that about ten or thirteen notes can be sung in a full voice (chest register), in comparison to the female soprano with half the number of full voice notes in the chest register (Celetti, 1996:109). Furthermore,\(^{10}\) Schiff (1999:424) notes that the changes which occur in both male and female singers during puberty cause the voice to drop “one third lower than that of a child” in females and “an octave lower than that of a child” in males.

\(^{10}\) Schiff (1999:424) notes that the changes which occur in both male and female singers during puberty cause the voice to drop “one third lower than that of a child” in females and “an octave lower than that of a child” in males.
the tempo and intensity with which male and female adolescent voices change also differ. McKenzie (1956:35) points out that the changes in each individual adolescent’s voice occur at their own pace.

The main reason why voices change during adolescence is the increase of hormones which relate to sexual maturity (Davids & LaTour, 2012:201). As mentioned before, the vocal folds in both girls and boys increase in length. For boys, the thickening of the vocal folds is also the result of hormone changes (Davids & LaTour, 2012:201). Schiff (1999:424) describes the change of the female voice from childhood to menopause as a result of the influence of the sex hormones known as testosterone (male hormones), as well as oestrogen and progesterone (female hormones).

It is not only the vocal tract that undergoes changes during adolescence. According to Thurman and Klitzke (1994:229), the “increased aerobic activity results in increased lung size and vital capacity in children”. During the period of rapid growth, the lungs increase in size and the amount of air that can be forcibly expelled from the lungs after maximum inhalation builds toward the level of an adult (Thurman & Klitzke, 1994:229). There are also differences in the growth rates of the chest wall, as well as the lung tissue, the capacity and volume of the lungs (Thurman & Klitzke, 1994:229).

According to Smith-Vaughn et al. (2013:403), it is possible for adolescents to learn life-long habits relating to speaking and singing. Thurman and Klitzke (1994:226) describe the world of the adolescent as being loud. Adolescents are at risk of attracting vocal fatigue or injury because of loud talking, yelling, cheerleading, singing excessively at sporting events and choir singing, as well as singing popular music in bands and consuming alcohol and smoking tobacco. Such habits, and other behaviours such as speaking loudly over loud music or with a loud glottal attack, throat clearing, grunting, yelling and laughing hard, can cause damage to a voice (Smith-Vaughn et al., 2013:404). Muscular tension, which also leads to phonating in an abnormal voice, can occur if an adolescent speaks or sings outside his or her comfortable range (tessitura). This muscular tension can lead to fatigue and swelling of the vocal folds (Smith-Vaughn et al. 2013:404). Emmons and Chase (2006:313) point out that, if young and adolescent singers continue to sing in a tessitura that is
too high, vocal strain can occur, which can cause permanent damage. According to Smith-Vaughn \textit{et al.} (2013:404), certain styles seem to pose more danger for developing vocal problems, such as nodules, in adult singers. Smith-Vaughn \textit{et al.} (2013:408) conducted research through video recordings and found more vocal tension in gospel and music theatre than when performing a classical style.

The challenge that faces a voice pedagogue or choral conductor is how to negotiate the transitional phase of the adolescent voice in a way that would ensure that the vocal instrument is kept healthy. For a number of centuries a traditional theory, also known as Break Theory (McKenzie, 1956:3) informed thinking, especially in the English Catholic Church, about whether it would be better for a boy to stop singing during the transitional phase or not. However, early twentieth-century and contemporary scholars argue differently.

McKenzie (1956:25) states that, if a boy uses his voice in a way that avoids harmful tension, he will not struggle when changes in his voice occur. The voice of an average boy who sings will lower gradually if it is handled properly (McKenzie, 1956:4). McKenzie (1956:25) also describes the importance of training, which should focus on healthy habits in using the voice – especially during the period before the onset of adolescence. Cooksey (1992:38) also believes that it is important to educate the adolescent singers about the “physiology and acoustics of singing and speaking”. He states that teachers should teach the adolescent singers to understand how the voice matures and issue warnings about tension or stressed singing (Cooksey, 1992:38). Smith-Vaugh et al. (2013:406) affirm that adolescent choristers who had had previous formal training seem to have less muscle tension in their larynxes than those who did not have such training. Stupple (2007:40) encourages teachers to help male adolescent singers improve their falsetto voice and to help them obtain the ability to monitor themselves in connection with the range in which they should sing, which quality of voice is most desirable and to identify areas that might pose problems later. It is best to teach adolescent singers appropriate concepts in order to ensure that they master, for example, the correct posture and breathing process in singing (Cooksey, 1992:37).
Miller (2000:29) advises that children can benefit from singing lessons during which they could learn to produce a better singing tone, as well as managing the breath and producing vowels which are clear and without tensions in the larynx. He warns against making immoderate demands on adolescent singers. Sound advice includes that the adolescent should sing mainly in the middle register, while avoiding too low or too high tessituras (Miller, 2000:29). The adolescent should also avoid singing too high and for extended periods at a time (Miller, 2000:30).

The teaching of vocal Western art music is based on the artistry of hundreds of years in Western history, dating from “ancient Greece” which brought forth “beauty, strength, and health” (Miller, 2000:30). According to Miller (2000:30), these measures cannot be found in many popular and traditional singing styles. Because of the perception that the bel canto technique is conducive to prolonged, sustainable and healthy phonation, it is possible that performers of other singing styles might benefit from an understanding of this technique.

2.2 Bel Canto

The discussion that follows considers the term bel canto. It explains the concept and various authors’ definitions of bel canto before considering the role that the castrati played in the development of bel canto during the Baroque era. The chapter then discusses the technical characteristics of bel canto singing, namely the breathing process (including the onset of tone and the concepts appoggio, breath control and breath support). Other characteristics include sostenuto, legato and coloratura singing. Furthermore, the unique tone, colour, projection and control of the voice, which is determined by the use of vibrato, chiaroscuro, register unification and vowel formation, will be discussed.

2.2.1 Conceptualization and origins

The concept of bel canto ranges over a broad spectrum of vocal history, pedagogy, different techniques of voice production and vocal expression (Stark, 2007:xvii). This diversity has resulted in differences of opinion among music historians and teachers about the use of the term. Robertson-Kirkland (2013:1) highlights the fact that the term
*bel canto* is used frequently, but there seems to be more than one definition, which can lead to some confusion.

Stark (2003: xlvii) suggests that *bel canto* is a term that is generally used but not properly defined, and that the labels that are used are acknowledged only slightly. He describes *bel canto* as a concept with two different but interconnected aspects (Stark, 2003:189). The first is seen as an extraordinarily cultivated approach to singing with the interaction between the “glottal source, the vocal tract, and the respiratory system” (Stark, 2003:189). This interaction manifests in the quality of the voice. The basic techniques of this quality of singing include *chiaroscuro*, *appoggio*, unified registers, flexible pitch and intensity, and a satisfying vibrato (Stark, 2003:189). The second aspect that Stark (2003:189) addresses is that *bel canto* concerns any “style of music that employs this kind of singing in a tasteful and expressive way”.

Furthermore, Robertson-Kirkland explains that throughout the 18th century arias were adapted to suit the voice types of the singers who participated in the operas. Robertson-Kirkland (2013:8) offers Mozart’s *Le nozze di Figaro* as an example of this practice. The composer composed two new arias for his lead soprano after the premier of the opera (Robertson-Kirkland, 2013:8). Robertson-Kirkland (2013:9) suggests that, because of the arias being composed for specific singers of the *bel canto* era, it is a challenge to define *bel canto*.

It is as challenging to determine the beginning and end of *bel canto* as it is to define the concept. Stark (2003:190) mentions that it is perilous to try and pinpoint the exact origin of any form of music. Miller (1996:101) states that, although writing a history of vocal literature in the 17th and 18th centuries is exciting, such historical renditions “seldom[…]tell us much beyond superficial descriptions”. The initial music scores of the Baroque era offered only the basic music and it was up to the singers to improvise by adding rhythmic variations, and ornaments to the melody to enhance “tempos and moods” (Elliot, 2006:7). Stark (2003:190) describes the late 16th to early 17th century as an era with new virtuoso singers who gained stardom with their solos full of incredible vocal displays. This era, with its developments in vocal technique, gave rise
to the Old Italian School of singing, which can be described as a first of the allegedly “golden ages of singing” (Stark, 2003:190).

Potter (2007:99) believes that during the 18th century the art of singing was mostly cultivated by the castrati.11 Robertson-Kirkland’s (2013:9) claim that the art of singing combined with flexibility and light florid embellishment was “closely connected to the castrato tradition” endorses Potter’s belief. Furthermore, Barbier (1996:59) mentions that women were banned from the theatre for more than a century and suggests that this exclusion led to a favourable environment for the development of the castrati in opera. Fortunately scholars such as Rosselli (1995), Barbier (1996), Potter (2007), Brett et al. (2007) and Robertson-Kirkland (2013) provide insights into the characteristics of the castrati voices – characteristics that can be seen as presenting similarities, such as vocal flexibility, resonance,12 extended range (register unification) and breath control, to those of the bel canto vocal technique.

Yet Robertson-Kirkland (2013:0) points out that, despite the castrato voice being a “significant and influential phenomenon in music history”, over time the decline in the use of the castrato voice created perceptions of bel canto as a mythical concept. Robertson-Kirkland (2013:1) proposes “two states” of bel canto singing, namely bel canto which was defined by the rise of the castrati during the 17th and 18th centuries, followed by the decline of castrato singers, which led to the myth of the style. Secondly, there was rebirth of bel canto singing, precipitated by singers of the early 20th century. Regardless of the perceived states, aspects relating to the castrato voice are important

11 Stark (2003:198) suggests that the castrato singers were the main element in the evolving bel canto era, but states that the basic "principles of bel canto were well established before the rise of castrato singers".

12 Sound which is still unprocessed originates from the vocal folds but is then transformed into your distinctive voice by the constructions at the top of the vocal folds (Jahn, 2013:27). In this higher-level air passage the voice obtains "power, color, and ring, as well as expression and emotion" (Jahn, 2013:27). The anatomy needed for articulation and resonance includes the "larynx, pharynx, nose, palate, tongue, mouth, and teeth" (Jahn, 2013:27). The sound that is specifically produced by the larynx includes numerous frequencies (Jahn, 2013:27). The auditory resonance, which is due the sympathetic vibration of the sound, is dependent on the resonant sound box which varies in dimensions and appearance (Jahn, 2013:28). According to Jahn (2013:28), the whole pharynx, which contains the vocal folds and the connection with the nasal cavity above the soft palate, can be altered into different shapes (Jahn, 2013:28)
because of the heritage they left – a heritage that led to an important development of opera vocal education (Robertson-Kirkland, 2013:0).

Robertson-Kirkland (2013:2) points out that *castrati*, such as Farinelli,\(^\text{13}\) had remarkable vocal ability and flexibility. The *castrati’s* ability to sing virtuoso, *coloratura* phrases with a long extensive breaths was the result of the physiological changes as a result of surgical castration (Robertson-Kirkland, 2013:2). This operation, which was performed to preserve the larynx in a shape which is associated with that of a child (Robertson-Kirkland, 2013:2), induced physiological and hormonal changes which led to anatomical irregularities as the body grew to adulthood. The main anatomical changes occurred in the larynx and in the torso.

Potter (2007:99) suggests that the *castrati’s* larynxes remained small, like that of a child, which allowed these singers to continue singing in the treble voice (Robertson-Kirkland, 2013:2). Barbier (1996:15) describes the *castrato* voice as high: “half-way between that of a child and that of a woman”. Therefore, the *tessitura* could tend towards that of a soprano or alto. However, this did not mean that the *castrati* only performed works with high *tessiture* Barbier (1996:202) points out that, for example, Farinelli’s vocal range exceeded three octaves. He sang comfortably in the lower register, which led to the calm, warm quality of his voice. Furthermore, singing in the treble range differed from the singing of woman or a child, because the voice also underwent other changes after castration (Robertson-Kirkland, 2013:3).

The *castrati* were grown men with well-developed torsos, which contributed to their superior breath capacity (Potter, 2007:99). The enlarged thoracic area allowed a strong flow of breath over the underdeveloped larynx, which resulted in a tone which was very resonant (Rosselli, 1992:33). Brett *et al.* (2007:144) state that the *castrato* voice is “powerful and strong; it penetrates the accompaniment, it rises above all instruments. It is hard, dry, with an enormous range and a remarkable loudness”. Robertson-Kirkland (2013:2) provides an example of such resonance by stating that

\[^{13}\text{Carlo Broschi (1705–1782) used ‘Farinelli’ as his stage name and was the most famous castrato singer during the 18th century (Barbier, 1996:201).}\]
Farinelli “surpassed the trumpeter with fast and complex ornamentation that stunned the audience” (Robertson-Kirkland, 2013:2). Brett et al. (2007:144) also compare the castrati voices with the piercing sound of a trumpet which can produce “coloratura ‘mit der Brust gestossen’ (belted out with the chest)”. Bel canto can be seen as a style of singing which draws attention to the opera singer (Bauer, 2013:34). Most of the 18th century can be associated with the bel canto era but, according to (Bauer, 2013:34), the peak was reached in the “middle of the 19th century” which slowly cleared a way for the prominent composers of the “Romantic era”. The works of bel canto composers left a thriving heritage for composers who followed (Bauer, 2013:34).

2.2.2 Characteristics of the bel canto technique

2.2.2.1 Breathing process

The aim for any good singer is to obtain an ideal sound through an effective breathing process (Miller, 2000:39). Stark (2003:92) claims that the perfect singing tone is fundamentally reliant on the manner in which the breath is used. He quotes an unknown source that states: “Chi sa ben respirare e sillibare saprà ben cantare (He who knows how to breathe and pronounce well, knows how to sing well)” (Stark, 2003:91). Spoto (2016:55) states that “breathing for singing is a complex coordination”, but suggests that, once this skill is learned, it is quite simple. This coordination to which Spoto (2016:55) refers involves an overall balance between the muscles for inhaling and exhaling, and then the resistance of the pressure of the breath which leads to the classical voice quality (Stark, 2003:119). This process is also known as appoggio. The concept of appoggio includes a “complete system of structural support” (Miller, 2004:1). This support includes the muscles for inhaling and exhaling, during which a prolonged, contradicting balance is reinforced by the “external laryngeal frame-support system” (Miller, 2004:1). The overall balance that involves the muscles used for inhaling and exhaling can further be defined as Ganzheit (total system), which includes many principles of the singing technique (Stark, 2003:119). The same principles developed and evolved in Germany during the late 19th and 20th centuries, called Stauprinzip or Stütze,14 which were associated with operas by Verdi and Wagner. Stauprinzip or Stütze requires powerful singing (Stark, 2003:119).
Spoto (2016:58) describes proper breathing as occurring when the “air supply is kept continuous against the pitch mechanism”, which includes a supple diaphragm and vocal folds that produce a smooth mucosal wave. According to Reid (1950:152), the vocal folds should be able to move freely and independently. Christy (1975:29) asserts that the muscles in the throat produce the best singing function when they are supple, with a well-adjusted tension. Robertson-Kirkland (2013:9) suggests that singers should be “encouraged to cultivate their voices according to their natural abilities”. This means that the instrument (the laryngeal mechanism) has to be free-hanging. This freedom and independence are initiated and sustained during the breathing process, when air is inhaled and exhaled with the use of different muscles.

Miller (2000:36) believes that, in order to become an expert singer, one needs a more advanced frequency of energy through breath control than in ordinary speech. A longer breathing phase is needed while singing and, therefore, the diaphragm, as well as the muscles of the abdominal wall and thorax, work together (Miller, 2000:36). This method of breathing requires the rate of exhaling to be delayed, which will give the feeling of singing almost as if ‘inhaling the sound’ (Miller, 2004:14). This ‘slowing down’ of the breathing-out phase, which is basically what the technique of appoggio, a concept mentioned in the first paragraph of this section, is all about (Miller, 2000:36). Miller (2004:14) suggests that this manner of singing helps to maintain the appoggio, because it eliminates any breathiness in the sound, while also allowing the singer to perform long sostenuto phrases. He also emphasizes that the larynx is supplied with breath through the lungs and that the trachea is already filled with air, ready for singing (Miller, 2000:38). After the singer has developed diaphragmatic breathing, and has progressed towards the appoggio breath concept, he or she can

Stauprinzip means breath damming, which is a technique that involves holding the breath through clearly noticeable pressures of the muscles in the trachea (Miller, 1977:28). This manner of breathing, which originates from the trachea and causes tension in the muscles of the larynx, can be associated with the feeling of uttering an uncomfortable moan or hoot (Miller, 1977:28).
continue to work on fast staccato runs, which will benefit the singer’s vocal agility (Miller, 2004:56). I shall discuss the concepts of legato and coloratura singing later in this chapter.

The breathing process begins with the act of inhalation. During inhalation, the lungs are filled with air to their maximum, but the subglottic pressure is low (Miller, 2004:14). Stark (2003:118) points out that research on Western vocal art music styles shows specific requirements in breath control during inhalation and expiration (Stark, 2003:118). He describes the fundamental inhalation in Western vocal art music as an inhalation that is followed by a sound that is controlled during exhaling. He also suggests that other factors which are related to managing the breath include “vocal onset, registers, proprioceptive feedback systems, carbon dioxide tolerance, vertical laryngeal positions, tone quality, vibrato, and expression” (Stark, 2003:92).

Christy (1975:35) points out that, after inhalation, a delay – which can also be referred to as a suspension (expansion around the waistline), with the outward action of the diaphragm muscles – is noticeable. Christy (1975:35) states that the Old Italian masters taught their students to withhold the breath, which is essential in establishing the delay, before continuing with the onset of pitch and the phrase that follows the onset of tone. Spoto (2016:58) warns that, without fundamental minimal pressure of the breath, tension can occur in the larynx and neck as a result of too little pressure or too much pressure for a specific pitch. Tension can build within the muscles being used during inhaling (inspiratory muscles) and exhaling (expiratory muscles).

One of the muscles that is intensely involved during the breathing process is the diaphragm (Thompson, 2014:15). The lungs fill and empty with air because of the diaphragm which rises and falls (Thompson, 2014:15). She goes on to explain that the diaphragm – together with the external and internal intercostal muscles – tightens,

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15 Christy (1975:29) mentions the fact that there is a clear difference between tension and tenseness during breathing. Tension is a necessity for great singing. Tenseness, which can be referred to as rigid tension, can be restrictive; a hindrance that prevents the muscles to move freely (Christy, 1975:29). This tightness of the muscles of the larynx and throat should be avoided at all times in order to sing successfully (Christy, 1975:29).
thus allowing the wall of the chest to enlarge in order for the lungs to inflate (Thompson, 2014:15). The external intercostal muscles lift the ribs during inhalation and the internal intercostal muscles pull the ribs back during exhalation (Thompson, 2014:15). The transversus abdominis in the abdomen – also known as the core muscles – are the most inward layer of muscles. These muscles contract during exhalation (Thompson, 2014:15). This breathing method that involves the diaphragm, intercostal muscles and the abdominal muscles in the breathing process is also known as diaphragmatic-intercostal breathing.

2.2.2.2 *Legato* and *coloratura* singing

Miller (1996:101) points out that an overview of the literature of vocal studies shows two different factors that constitute the basis of good singing, namely *sostenuto* and *coloratura* and he claims that the technical skills required to sustain (*sostenuto*) and move (*coloratura*) the voice are essential as the two poles of the bel canto vocal technique. He asserts that “[w]hsoever the singer may be, unless he or she learns the technical skills essential to both moving and sustaining the voice, success will be limited” (Miller, 1996:103).

*Sostenuto* relates strongly to *legato* singing and, in order to develop good *legato* singing, technical skills should be practised. A good foundation for singing *legato* is breath control through accomplishing the onset and release of tone while controlling the flow of breath (Miller, 1996:102). In order to achieve the ability to sustain the voice, the singers should be able to mobilize the voice in a free manner (Miller, 2000:110). Miller (2000:110) describes *sostenuto* as an “advanced technical component of the singing art”. Legato singing can be achieved through the skill of sustaining the sound on the vowels and “avoiding the prolongation of consonants (keeping them crisply energized) and postponing the final vowel of a diphthong by giving primary attention to the first vowel” (Ware, 1998:170). Further exercises include breath renewal, which

expands into vocalises that promote vocal agility for sostenuto phrases. Below is an example (Example 1) of a melismatic slur that would require legato singing.

Example 1: Handel - O Sleep! Why Dost Thou Leave Me (bars 9–13)

Another concept that relates closely to legato singing is portamento. Stark (2003:165) describes portamento as the voice moving smoothly from one pitch to the other, passing through the connecting notes slower than when singing legato. Portamento was periodically clearly marked in the sheet music but was also suggested by a melismatic slur, usually over two separate syllables (Elliot, 2006:141).

However, the bel canto style does not only demand sustained, legato singing. Robertson-Kirkland (2013:7) states that vocal agility and “flexibility [were] cultivated by both the castrato and non-castrated singer” and the development of flexibility is key in vocal technique. No matter what voice the singer has, the voice will also need to be flexible and free to move free during quick, melismatic phrases (Miller, 2000:56). Most vocal pieces, especially for sopranos, require sostenuto and agility skills (Miller, 2000:56). Agility can only be acquired after the skill of “clean onset, release, and quiet breath renewal” is secured (Miller, 2000:56). In order to develop the skill of singing fast, agile passages, (Example 2, bars 4 and 5), Miller (2000:56) advises singers to sing triadic vocal exercises staccato, as well as legato. These exercises can be executed by imagining abdominal sensations associated with laughter or rapid breathing (Miller, 2000:57).
Example 2: Handel - *Rejoice* from *The Messiah* (bars 9–14)

Miller (1996:102) points out that, even in the early operas, singers had to show their technical skills of singing *sostenuto* and *coloratura* passages, especially when singing the *cavatina* and *cabaletta*.¹⁷ There are several examples of works from oratorio and operas where the *cavatina* and *cabaletta* feature. These works include “a recitative, a sustained aria, and a swiftly moving pyrotechnical second aria” (Miller, 2000:110). *Piangero’ la sorte mia* from *Giulio Cesare in Egitto* by Handel (Example 4) is a good example of the musical structure where the work begins with a recitative, followed by a slow aria that demands legato singing. The slow aria (Example 3) is followed by the energetic *cabaletta* (Example 4) which then returns to the *da capo* section.

Example 3: Handel – *Piangero la sorte mia* from *Giulio Cesare* (bars 1–15)

¹⁷ Hoch (2014:14) describes the *cavatina* as “a slow and expressive aria” and a *cabaletta* as a “fast and brilliant aria”.
2.2.2.3 Vocal embellishment

Stark (2003:188) considers the idea that, apart from the “expressive power in the trained singing voice”, there is another feature of expression that is beneficial for the singer in order to charm, move and astonish the audience. Besides concepts such as *legato*, *sostenuto* and *portamento*, other characteristics of the voice, such as embellishment, contribute to the affective value of a performance (Stark, 2003:188). Ornaments were used to strengthen the words and intensify the expression of the piece being sung (Elliott, 2006:21).

The ability to perform various embellishments, such as *glissandi*, *portamento* and trills relates closely to a singer’s vocal agility and flexibility. According to Elliott (2006:21), the ornaments of the 17th century can be divided into two groups. The first group is known as *graces*, but they are seen as minor because they do not change the melody, but rather decorate it with “trills, trillos, gruppi, esclamanzioni, and messa di voce” (Elliott, 2006:21). The trillo\(^{18}\) and gruppo were mostly used when singing a cadence

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\(^{18}\) The *trill* should not be confused with vibrato. The larynx intentionally oscillates with a raised pitch when producing a trill, which is not the case with vibrato (Miller, 2000:140). A singer who wants to sing Baroque music should be able to define the difference between vibrato and *trillo* or *gruppo* (Elliott, 2006:25).
A *trillo* is the vibration on a single note (Example 5, bars 10–16) and the *gruppo* on two notes (Elliott, 2006:25). The trill, which is one of the minor graces, is regarded as the most significant (Elliott, 2006:22). It is best described by Garcia (1894:40) as a “rapid, equal, and distinct alternation of two notes at the distance of a major or minor second, according to the position of the trill in the scales”. The second group of ornaments entails segmentation, which is the action of separating large notes into smaller, livelier values that change the melody (Elliott, 2006:21).

Another important exercise that the early Italian pedagogues and singers used is known as the *messa di voce* exercise. Duey (2013:89) points out that *messa di voce*, which implies increasing and decreasing the intensity of tone, is the most important ornament of the *bel canto* style. According to Frisell (2007:58), *messa di voce* was established at a conservatory of music named *Scuola Cantorum* appointed by Pope Sylvester (314-336 AD). Miller (2004:232) describes *messa di voce* as an ideal exercise in which a skilful singer has absolute control of phonation, combined with optimal breath control. Stark (2003:245) describes *messa di voce* as “the ultimate test of a good vocal technique”. The main character of *messa di voce* shows the increase and decrease in the intensity levels of the sound (Stark, 2003:244). A phrase can begin with the dynamic of “*p* or *pp*” developing with *crescendo* to “*f* or *ff*” and then back to “*p* or *pp*” (Miller, 2004:232). In order to be able to sing long phrases with *crescendo* and
descrescendo, the position of the abdominal wall should be preserved for the longest possible period during inhalation (Miller, 2004:233). In messa di voce the crescendo and descrescendo must be distributed over the whole phrase and not limited to single syllables (Miller, 2004:233). In Example 6, the long note indicated with the bracket can be sung using messa di voce.

Example 6: Alma Mia from Floridante (bars 1–5)

Miller (2000:156) suggests that through acquiring the skill of messa di voce the singer will be prepared for any phrase which will need to undergo a change in strength. According to Frisell (2003:58), the messa di voce exercise was favoured by most bel canto singers and teachers as a very helpful exercise while they were pursuing the construction of a higher-level instrument. During the bel canto era the messa di voce was one of the most important exercises for breath control and breath support (Frisell, 2003:20). He suggests that a singer should be able to perform the messa di voce with success on all five Italian vowels, with the single pitch of the overall range.

Other embellishments include esclamazione and rubato. Esclamazione is the way in which the voice starts a note which is long in a phrase by starting soft and progressing in volume. Rubato is an Italian term that translates as 'stolen time'. When applying rubato the performer affords himself or herself the freedom to sometimes elongate or shorten some notes (or group of notes) in the melodic line more than the written symbol indicates. Rubato is used for conveying the emotions of the sung text (Elliott, 2006:26).
2.2.2.4 Vibrato

The meaning of the Latin verb *vibrare* means to vibrate (Sell, 2005:116). The vibrato\(^{19}\) was implemented to enhance expression especially in performing with the voice (Sell, 2005:116). Since the early days of the Baroque era the slight fluctuation in the pitch of the tone played an important role in great singing (Stark, 2003:150). The natural vibrato of the singers during the Baroque era was admired by people playing instruments such as the organ and string instruments. In the case of the organ, the slight tremolo of the *vox humana* stop attempts to imitate the voice (Elliott, 2006:15), while the performers of string instruments create vibrato by applying a gentle shaking movement of the hand and wrist while the fingers are on the strings.

Elliott (2006:15) believes that “[v]ibrato is a natural part of healthy singing”. Sherman (2003:266) asserts that it is essential for a *bel canto* singer to sing with vibrato and suggests that any singer who sings with a more sensitive nature should be able to apply vibrato. Toft (2013:85) describes vibrato as a tool to help singers express emotions that they want to communicate through tone.

Miller (2004:125) suggests that young singers (children) will develop a vibrato which is natural if they learn the appropriate breath management and vocal expression. Elliott (2006:15) points out that it seems that women are more prone to singing with vibrato than men. His claim that mature voices, more than young voices, are also characterised by vibrato (Elliott, 2006:15) is in line with Miller’s (2004:122) assertion that vibrato is an important element for the resonance in a singer’s voice (Miller, 2004:122). Sell (2005:117) believes that vibrato also contributes to the understanding of the pitch, strength and tone colour of the voice (Sell, 2005:117). Legato singing requires vibrato (Sell, 2005:118).

\(^{19}\) Elliott (2006:15) highlights the fact that vibrato is different from the ornaments in *Bel Canto* singing such as tremolo and trills. The tremolo differs from the vibrato as a result of a physiological cause with different modes in tone production. Stark (2003:150) describes the *tremolo* as a “form of glottal articulation”; the arytenoid cartilages close and open, because of the interruption of the tone.
According to Miller (2004:121), studies show that the vocal folds vibrate together with movement in the wall of the pharynx, epiglottis and the root of the tongue. He describes this vibrato as “periodic muscle relaxation during heavy-duty activity” (Miller, 2004:121). He also mentions that the primary laryngeal position\(^2\) remains balanced during vibrato (Miller, 2004:122). Vibrato can also be described as a “fluctuation of a single pitch that varies no more than a semitone or a third of a whole tone” (Ware, 1998:180).

Problems can occur with vibrato because of a rate that is either too slow or too fast, or the pitch that varies too much (Sell, 2005:118). This can be seen as a warning sign, because of the muscles involved being used in an uncontrolled or inappropriate way (Jahn, 2013: 360). Older singers can develop a tremolo (wobble) because of less exercise, either vocally or physically (Sell, 2005:118). According to Stark (2003:150), the size of the orchestras and opera houses grew over the years and naturally the singers had to adjust by gaining strength through increasing the pressure of the breath and the glottal resistance and by the larynx that is lowered (Stark, 2003:151). All this put more stress on the muscles involved in singing and led to a more prominent vibrato (Stark. 2003:152).

2.2.2.5 Chiaroscuro

Chiaroscuro originated in Italy and carries the same meaning in vocal pedagogy as in the creative arts (Miller, 2004:64). Stark (2003:56) describes chiaroscuro as a specific colour of tone, one for which both male and female voices strive. This quality of tone is so distinct from other forms of music that any random person will associate it with opera singing (Stark, 2003:34). The term refers to a timbre with well-balanced components of both brightness and darkness of sound (Stark, 2003:34). Brightness can be obtained through a tight closure in the glottis, which produces a “tone that is

\(^{20}\) Kayes (2004:22) states that “[a] healthy larynx has a good range of movement up and down”. However, it is not only the raised or lowered larynx which informs the sound production in singing. The larynx can be neutral (free-hanging), move up or down and tilt either forward or backward (Kayes, 2004:23). The forward tilt of the thyroid cartilage is necessary so that the vocal folds can be activated for singing higher notes. The forward tilt of the cricoid cartilages shortens the vocal folds (Kayes, 2004:23).
rich in high-frequency components” (Stark, 2003:34). On the other hand, there is the dark quality which gives a round and deeper quality to the tone (Stark, 2003:34). This round and deep quality is produced by the vocal tract and its resonance space that is situated between the mouth opening, nose and glottis (Stark, 2003:34). According to Miller (1996:82), in order to bring forth a bright tone, the larynx should be elevated, which shortens the vocal tract, while the opposite is the tube of the resonator, which should be lowered for a darker tone (Miller, 1996:82). Stark (2003:33) states that chiarosuro was regarded as the “ideal voice quality” during the 18th and 19th centuries; it is a quality that is essential to perform Western art music – even today (Stark, 2003:56). Any singer in the classical genre should strive towards the ideal of chiarosuro (Hoch, 2014:50). According to Miller (1996:10), a tone colour of a singing voice which has a balanced resonance over the whole range of the voice can be described as chiarosuro. There should be balance between the basic pitch and the proper vowel together with the energy of the acoustics in the area of the formant of the singer (Miller, 1996:12). When pitch moves up, the vowels should be modified in order to keep the acoustic balance (Miller, 1996:12).

2.2.2.6 Registers and register unification

It is not the intention of this research study to enter into an in-depth discussion of voice registers. Esteemed scholars such as Sell (2017), Miller (2008), Frisell (2007), Stark (2003) and Ware (1997) – to name only a few – have written extensively about this concept. However, before one can begin a discussion about register unification, it is necessary to consider briefly some of the theories relating to vocal registers.

Stark (2003:58) describes the theory promoted by the Old Italian School, namely the two-register theory as promoted by Zacconi. Stark (2003:58) points out that Zacconi (1592) – a master of his time – observed two qualities during singing in prior explanations on registers in his “Prattica di musica”, namely voce di petto (chest voice) and voce di testa (head voice). Zacconi favoured chest voice to head voice (Stark, 2003:58). When Zacconi spoke of singers, he was referring only to male singers (boys and falsettists), since female singers were not allowed to sing choral music at that time (Stark, 2003:59). In early observations Garcia (1894), who
used a laryngoscope to examine the vocal mechanism, also formulated a two-register theory.

Jahn (2013:26) points out that the chest and head registers are distinguished by pitch as well as quality. He also asserts that “two different muscle mechanisms are used to produce these two types of voice (Jahn, 2013:26). Producing the chest voice involves some of the intrinsic laryngeal muscles, namely the vocalis and the lateral crico-arytenoid muscles (Jahn, 2013:26). As phonation in the head voice occurs, extrinsic muscles of the larynx, namely the cricothyroid muscles, become involved. The vocal folds become longer and thinner as the thyroid cartilage tilts forward (Jahn, 2013:26) and the smaller vocalis muscle relaxes a bit.

Jahn (2013:26) asserts that

“[s]ince the two mechanisms are quite different, a smooth transition from the muscles used in chest voice to those used in head voice is essential for good singing”.

Marchesi (1970: xiv) claims that the female voice possesses three registers, namely a chest, middle and head registers. She uses the term medium for the middle register because of the position of the register along the range of the voice and also to avoid creating any uncertainty about the term falsetto, which is associated with a man’s voice (Marchesi, 1970: xiv). By recognizing three registers – namely head, chest and mixed – the three-register theory is supported (Ware, 1997:116). When the chest qualities are combined with the head qualities, the result is a mixed register (Ware, 1997:116). According to Ware (1997:116), this theory of three registers is apparently widely welcomed.

Stark (2003:120) claims that the interaction between the “breath pressure, glottal resistance and vocal tract adjustments (especially the vertical laryngeal position) gives the singer tools to vary the intensity and voice quality, and to sing with a seamless legato and without apparent register transition” (Stark, 2003:1). The transition from one register to another involves the passaggio.
Passaggio means break in ordinary speech, which refers to the position where two registers converge (Hoch, 2014:41). For the trained voice it is simply the movement between registers. Miller (2004:29) writes that when the singer reaches the primo passaggio, more energy through the breath is needed than ordinary speech. More breath and energy, as well as elongated vocal folds, are needed for the pitches that follow the secondo passaggio (Miller, 2004:29). The zona di passaggio can be described as “the area of the voice where a number of tones can be sung by varying register emphases; middle voice” (Miller, 1993:161). It is the area where the lower chest voice and higher head voice interchange, resulting in “mixed voice” (Miller, 1993:157). According to Miller (2000:120), there are four factors concerning the management of the breath in acquiring register unification, namely an elevated sternum, a ribcage that is stable and ultimately expanded, a diaphragm that is in a low position for extended time and the delay of the exhalation rate.

A term that is frequently used when working on register unification is cover. Tenors, for example, learn to cover their voices, when they extend their “chest register upward beyond its normal limits” in order to negotiate the passaggio and unify the registers (Stark, 2003:56). This can only be achieved by adjusting the vocal tract and lowering the larynx (Stark, 2003:56). In 1840 Garcia introduced a theory to the Académie des Sciences that seriously considered the position of the larynx (Stark, 2003:41). During that year a French tenor presented a profound technique where he sang in his chest voice and reached the C5 (Stark, 2003:41). This technique became known as “voix sombre ou couverte (dark or covered voice)” (Stark, 2003:41). Vennard (1967:152–153) describes voix sombrée and voix couverte as words “assigned to low larynx technic”.

2.2.2.7 Vowel formation

According to Stark (2003:153), the heart of vocal art lies in the ability to move the listener’s heart through expressivity and soulful singing. One vocal element which adds to musical expressivity is the alliance between the text and tone that is sung (Stark, 2003:154). Every tone that is sung has its own quality, which is accompanied by the frequency and intensity of energy that is distributed. The overtones also add to the
characteristics of the tone such as “brilliance, shrillness, or thickness” (Reid, 1950:38). The definition of the vowel is the main feature which differentiates between the present-day dialects (Miller, 2004:65). In Western art music the singer is required to align the vowels. The vowels should be sung from the front of the mouth with the tongue and jaw relaxed (Hass, 2013:402). The vowel formation can be described as somewhat elongated and the consonants are pronounced very clearly (Hass, 2013:372). Common examples of vowels are [u], [o] and [a] (Hoch, 2014:31). Every vowel which is sung constructs its particular form of the vocal tract (Miller, 2004:65). During singing a singer should strive for clear articulation of language while preserving a tone of a *chiaroscuro*, and this can only be achieved if the shape of the vocal tract correlates with the vowel being determined (Miller, 2004:66). In order to keep the vowels pure during singing the vowels can be adjusted. The [u] sound “possesses an inherent ability to engage the purest and greatest percentage of upper register, muscular control, and to disconnect itself from the power of the chest voice, the singer can be sure that all vowels subjected to and transformed by the correct u (oo) vowel tuning are in proper register alignment, especially in terms of ‘weight’ and thickness/thinness evaluations” (Frisell, 2007:23).

Robertson-Kirkland (2013:4) suggests that important exercises that were used during vocal training were *solfeggio* exercises. He describes these exercises as “long and complex exercises, similar in style to the exercises written for instrumentalists” and points out the they were performed on either the vowels [a], [e] and [u] or by using the solfa (Robertson-Kirkland, 2013:4). According to Robertson-Kirkland (2013:4), these exercises – which build the flexibility of the voice – are conducive to the vocal development of all singers. Singers would use these exercises to master the vocal technique and breathing process needed to become competent enough to perform songs and arias (Robertson-Kirkland, 2013:5).

2.3 Conclusion

At the beginning of this chapter I stated that I shall consider the physical development of the adolescent male and female voice, as well as the different hormones which contribute to the development of these voices. The adolescent voice changes because
of the impact of hormone levels which rise during puberty. Changes occur in the vocal folds’ length, as well as in the vocal tract. Many young singers sing as much as adults during this development phase, though some scholars regard this phase as one during which the voice is very vulnerable.

I also indicated that the chapter will offer insight into the concept and characteristics of bel canto. The bel canto style is characterised by, for example, legato singing, beautiful embellishments, a controlled vibrato, a balance between brightness and darkness, as well as an evenness in timbre throughout all the registers. The technical skills required to perform this style of singing include effective breathing, which is fundamental for the perfect tone, combined with the muscles used during inhaling and exhaling process. The basis of good singing includes the skill to sustain the voice and move the voice. Vocal embellishments, as well as vibrato and chiaroscuro are all skills required of the bel canto singer. The ability to sing, for example, legato, staccato, portamento, messa di voce and coloratura with a controlled vibrato and the necessary balance between brightness and darkness contributes to the way the voice is produced and enhances the affects and expressions that contribute to the performance.

The importance of the breathing process is clear, as well as the necessity for register unification and appropriate vowel formation. The registers should be sung without a break – moving seamlessly through the passage Vowels are formed in the vocal tract and adds to the quality and frequency of the tone.

The next chapter will explore the concept of belting in further detail.
CHAPTER 3: LITERATURE REVIEW (CONTINUED)

All genres of music give singers the possibility to express thoughts and feelings and, as in any other form of entertainment, the performance of someone who sings contemporary commercial music (CCM) should be compelling. Kempfer (2014:2) suggests that certain styles of CCM singing which may be more indulgent can benefit singers in learning to sing with more expressed feelings. Musical theatre may benefit the singer by “characterization and acting through the music that may allow students to connect with musical ideas on a higher level” (Kempfer, 2014:2). However, giving a truly compelling performance is something that is challenging when accompanied by a small band and few visual effects to set a mood (Davies & Jahn, 2004:65). More instruments with help of visual effects for instance lights, smoke effects, and footage helps the singer to set a mood. Furthermore, should the performer not feel any connection to a specific genre, it can result in a presentation which is dull and without feeling (Kempfer, 2014:2). This is particularly so for opera and operetta singers.

In order to sing a song in a specific style, the appropriate technique should be used (Kempfer, 2014:2). Because of the prominence of CCM styles, attention should be devoted to the “vocal technique and pedagogy involved”. Such attention will further result in an understanding that will ensure healthy singing, especially in children (Kempfer, 2014:3). Streeton and Raymond (2014:134) believe that the specific quality of belting arises when a good singer or actor sings and expresses an intense emotion while still singing with a controlled technique.

Popeil (2007:78) describes a variety of vocal colours in belting: “soft and loud, nasal and less nasal, larynx high and anchored, with more and less glanz”. These diverse qualities help the singer in expressing different emotions when performing the song (Popeil, 2007:78). In order for singers to set the mood in CCM, they usually use their voice outside the natural frequency of their ordinary speech. Popeil (2007:78) suggests that a belting technique that emulates speech is less affected, as well as more pleasing to the ear. Davies and Jahn (2004:65) assert that the singer’s “speaking voice, as his singing voice, is his ‘signature’.”

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Considered from the perspective of Western art music, the vocal technique used when performing music theatre\textsuperscript{21} or CCM is different from the technique used when singing Western art music (Popeil, 2007:77). Chandler (2014:36) points out that “aspects of [classic teaching methods] do not automatically apply to non-Classical styles of singing”. Popeil (2007:77) lists styles such as popular music, Rhythm and Blues (R&B), country music, rock music and jazz as examples of CCM in which the belting technique is used. Stark (2003:85) also confirms that belting is used in a broad spectrum of popular genres of singing, such as musical theatre and CCM. He also regards belting as “a necessary technique for ‘cross-over’ singers, who move between classical and vernacular repertoire” (Stark, 2003:85). Davies and Jahn (2004:61) point out that belting and covered singing are suitable and necessary for stage singing.

Stark (2003:85) compares belting to covered singing in Western vocal art music. “In the male voice, belting is distinguished from covering primarily by the high position of the larynx” (Stark, 2003:86) and “the chest register is extended upwards beyond its normal limits” (Stark, 2003:86). However, in contrast to belting, a covered tone occurs when a male singer belts a high note and then lowers the larynx, while expanding the pharynx (Stark, 2003:86). The difference between a belting tone and a covered tone is the result of the different positions of the larynx.

This chapter considers belting as a singing technique used in contemporary commercial music (CCM) by male and female singers (Stark, 2003:84). It addresses belting as a concept, as well as certain characteristics of the belting style which benefit the CCM singer, for instance the breathing process, the specific sound, embellishments, vibrato, resonance, breath control, vowel formations and the position of the larynx. Possible dangers and warnings signs are discussed as well as problems associated with belting.

\textsuperscript{21} As is the case when performing opera and operetta, the goal of music theatre singing is the expression of emotions during dramatization (Popeil, 2007:79). Belting has the ability to project powerful dramatic feelings and can, for example, be very effective during the climax or chorus of a song (Gagné, 2015:1).
3.1 Conceptualization

Belting has become very popular since the 20th century and, just like in other parts of the world, adolescents in South Africa seem to aspire to become the next winner of *Idols* or *The Voice*. However, some of the characteristics of belting are not uniquely contemporary features. Stark (2003:75) compares belting to the concept *sguaiato* (coarse tone), referred to by the Italian voice pedagogue, Francesco Lamperti (1839–1910). Stark (2003:75) also reminds us of Manual Garcia II (1805–1906), who noticed that, when men sing in their high register, they sometimes contracted their pharyngeal muscles, a technique which Garcia was hesitant to encourage. According to Davies and Jahn (2004:61), there is a lot of pressure on CCM singers, especially Broadway singers, who spend long hours on stage, to deliver exciting performances. Gagné (2015:1) points out that there is a long list of artists who use the belting technique during singing. She states that there are over forty radio stations across America that play recordings of well-known CCM singers who belt, such as for example, Beyoncé, Pink, Katy Perry, Christina Aguilera and Lady Gaga. Singers such as these inspire a desire in many adolescent singers to learn how to belt (Gagné, 2015:1). The demand for taking singing classes, and especially learning how to belt, is significant, especially because singers want to emulate their favourite singing stars.

Because of singers who have had careers performing CCM for 50 years and more, there is a pedagogical need to delineate the type of voice that performs CCM, as well as the teaching methods used to facilitate the sound (Chandler, 2014:36). The concept of belting is described by several scholars. Stark (2003:85), who writes extensively about the history of *bel canto* explains that belting happens when the “chest voice is carried beyond the point where it would ordinarily switch register”. Hass (2013:402), an internationally acknowledged voice pedagogue in all the CCM genres, refers to belting as something exhilarating that should be used with care. While Popeil (2007:77) claims that belting is similar to ordinary speech or screaming, Gagné (2015:1) describes this technique as “a type of singing that is robust, bright and loud”. Bonin (2012:3) also describes belting as a technique which is produced when the singer wants to share a unique sound which is strong and loud. It is a powerful feeling when the pressure of the air rises upwards from the lungs through the vocal tract,
producing the sensation of pressure as the singer presses the voice along notes that seemingly become acoustically ‘tighter’ while ascending (Gagné, 2015:1). Belting is a pushed type of singing, almost yelling set to music, but in fact is a sonorous chest voice that is pushed up into the range of the head voice (Davies & Jahn, 2004:63).

This forced elevation of the chest voice into the higher range of head voice is a quality that differs from the higher head voice, because of the work done by the other muscles in the larynx (Davies & Jahn, 2004:63). Belt singers often raise the larynx and also increase muscle tension in the supraglottal area, while continuously contracting the chest register muscles, sometimes to a potentially harmful degree (Davies & Jahn, 2004:63). Singing with a high larynx and without vibrato (i.e. straight tone singing) is applied on occasion for special effects, but is combined with the ability to lower the larynx intentionally in order to avoid spasms in the external muscles (Davies & Jahn, 2004:64). The laryngeal position, as well as registers and register unification in belt singing will be discussed later in this chapter.

A singer who wants to sing CCM should know that there are many demands on their vocal and physical abilities (Davies & Jahn, 2004:61). Stark (2003:85) points out that Garcia already cautioned in 1847 against singing too forcefully with a raised larynx. This kind of singing could result in “exhaustion and paralysis of the organ” (Stark, 2003:75). In cases where the pressure and demands of the performance career, and a lack of proper training, are combined with life-style habits such as smoking, taking drugs, drinking and too much partying, there is a danger that the singer’s instrument can be damaged (Davies & Jahn, 2004:61).

Often singers who sing popular genres lack classical training and or have had only a few voice lessons (Davies & Jahn, 2004:61). Davies and Jahn (2004:61) believe that less than adequate voice training leads to poor vocal technique with poor habits and potentially detrimental consequences. Excessive and inappropriate belting, for example, might lead to physical reddening and swelling of the vocal folds which could further lead to physical trauma such as nodules and polyps (Davies & Jahn, 2004:63).
Davies and Jahn (2004:64) advocate the benefit of classical methods and a good warm-up session for CCM singers. Davies and Jahn (2004:61) state that it is beneficial for CCM singing students to acquire training in the techniques associated with Western vocal art music. They are of the opinion that this background in classical techniques will help professional singers to look after their voices in order to enjoy a long and healthy career (Davies & Jahn, 2004:62). They believe, for example, that it is important to develop the head voice, because it can help singers when they learn to vary or blend belting with the head voice (Davies & Jahn, 2004:64). The singers with damage to their vocal folds usually lose their head voice first (Davies & Jahn, 2004:64).

3.2 Characteristics of belting style and technique

3.2.1 Breathing process

When speaking of airflow as the source of the belting voice, the voice can be compared to a wind instrument and, while studying singing techniques, the singer learns to control the breath for effectual singing (Gagné, 2015:13). The air one breathes in is the origin and strength of your voice (Gagné, 2015:13).

There is an important difference between singers trained in classical techniques and untrained singers, namely how they use the air inside their lungs (Davies & Jahn, 2004:62). Trained singers use the air in their lungs more efficiently: “the trained singer learns to use a higher proportion of the air in his lungs” (Davies & Jahn, 2004:62). The breath used in classical singing would probably be too much when singing CCM. Kempfer (2014:59) claims that, excessive breath might result in belting that “will sound forced, and could potentially be damaging to the voice” (Kempfer, 2014:59). Kempfer (2014:27) also points out that “[b]ecause of the longer closed phase of the vocal folds compared to classical singing, belting requires less air pressure, therefore, less air should be taken in for singing”.

Breath support for any type of singing demands the optimum operation of muscles that will be required during exhaling (Kayes, 2014:28). The breathing process varies during singing. A supple breathing process that involves specific muscles and will produce the correct amount of breath is needed for a specific vocal action (Kayes,
Singers should check that their bodies are in balance. When the singer’s larynx is free of obstruction and the vocal folds work perfectly, the breathing will come naturally (Kayes, 2014:39).

Hass (2013:388) believes that effective breath support is the foundation for singing. She explains that breath support allows us to hold back excessive air pressure from our vocal folds; it is a *sine qua non* of an easier vocal facility without excess vibrato or a breathy tone [and] encourages efficient vocal fold closure, which means production of a stronger, more focused, sustainable, and clean sound.

She describes basic breath support for singing as the air flow which comes from the lungs in a steady and prolonged manner. Hass (2013:388) believes that the support for breathing should not be a rigid process. The pitch and vocal timbre determine the manner in which a singer supports the sound (Hass, 2013:290).

The amount of air that passes through the vocal folds influences the type of tone that is produced. Hass (2013:389) suggests that, in order to support the management of the breath for sustained singing, a singer should use the pelvic floor, as well as appropriate muscles such as the diaphragm, the *latissimus dorsi* and the *quadatrus lumborum*. She also asserts that singers should take care to breathe low into the body, with the lower abdominal muscles being released completely during the inhalation process (Hass, 2013:389), especially when singing in the head voice. It is important to regulate the intake of breath. In order to sing with different tones and timbres, the singer’s breath support should differ according to the task (Hass, 2013:390). Too much vibrato in your low register can be the result of excessive support (Hass, 2013:390). Good, low and supported breathing is needed for singing in the high register (Hass, 2013:390).

However, Hass (2013:390) points out that belting, as well as singing opera, requires even more support, but the support in belting is different from that in opera since belting often requires a high and fast breath inhalation. She asserts that the support for belting is quite different from the support used for Western vocal art music (Hass, 2013:390).
2013:390) because, in the case of belting, the singer only needs a little air because the vocal folds are shorter in length\textsuperscript{22} which oscillate on a broad border (Hass, 2013:390).

Chandler (2014:38) claims that, although belting in CCM is similar to ordinary speech, the requirements for breathing are nonetheless more than required for breathing for everyday activities. He believes that it is important to explain breathing to untrained singers, because there seems to a notion to quickly snatch a breath in the upper chest area or to overfill the lungs with air (Chandler, 2014:38). Furthermore, CCM music also needs a flexible, dynamic support system (Chandler, 2014:38). He asserts:

The support strategy I find most effective is similar to that which one can feel happening in natural responses such as laughter, i.e. a gentle inward/upward movement of the lower abdominal wall on voicing (Chandler, 2014:38).

Inhalation through the mouth, which should be “silent, low, effective, reflexive ‘catch’ breath or ‘recoil’ breath” (Chandler, 2014:38), is quicker than through the nose. The ability to sustain the sound differs from style to style, but the necessity to prolong pitch is typical of all styles of singing (Chandler, 2014:28).

Gagné (2015:14) asserts that the most important muscle involved in the breathing process is the diaphragm, which contributes seventy percent to the process. Belters are taught to use the diaphragm during singing, which implies the downward movement of the diaphragm muscle when you inhale and then the relaxation of the muscle with an upward movement, when you exhale (Gagné, 2015:15). The singer controls the release of the air (air flow) during exhaling with the muscles in the upper abdominal area, together with the intercostal muscles of the ribs (Gagné, 2015:15). According to Gagné (2015:15), this coordinated breathing does not require excessive

\textsuperscript{22} Hass (2013:390) explains that “the vocal folds are short, vibrating on a thick edge, and closed for about 60-70 percent of the cycle”.

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strength or tightening of the muscles involved. It also allows for a free-hanging larynx that can be maneuvered more comfortably.

### 3.2.2 Laryngeal position

The pairs of true and false vocal folds are close together and can either be constricted (compressed) or retracted (drawn back) (Kayes, 2014:11). While retraction is not needed in ordinary speech (Kayes, 2014:13), it is necessary to learn the ability to retract, a term that refers to the feeling of openness and space inside the larynx (Kayes, 2014:12), when singing. Kayes (2014:13) refers to the vocal folds as being pulled back or retracted, which gives the idea of an extended capacity in the larynx. This extended capacity during contraction in the larynx gives room for the vocal folds to vibrate freely (Kayes, 2014:13). The retraction of the vocal folds is needed for a higher-quality voice production in belting (Kayes, 2014:13). The open space feeling that results from retraction can become obstructive when combined with interference from tense muscles in the larynx (Kayes, 2014:12). Therefore, the muscles in the neck and in the larynx should be free. Hass (2013:393) asserts that it is important that a singer should not extend his neck upwards, as it shortens the space for the larynx and prevents it from moving freely.

According to Kayes (2014:22), the larynx should ideally have the ability to move freely within an agreeable span. In Chapter Two (footnote 20) I stated that the larynx can move in various directions. Kayes (2014:22) states that the larynx can move upwards and downwards along with other movements during singing (Kayes, 2014:22). Changes in the vocal sound are due to the vocal tract which lengthens and shortens when the laryngeal position is altered (Chandler, 2014:39). The altering of the vocal tract changes the vocal resonance (Kayes, 2014:24). A lower position, for example, will result in a warmer timbre. Kayes (2014:24) points out that artists and pedagogues who are involved in opera prefer a lowered larynx, but he does not believe that a lowered larynx is a requirement for vocal health.

Jahn (2013:395) regards the fundamental difference between performing CCM and Western art music as being the laryngeal position. Earlier in this discussion I
mentioned that CCM singers often raise their larynxes when belting. Kempfer (2014:12) suggests that the bright tone of CCM singing is caused by the vocal tract being contracted (Kempfer, 2014:12). The openness in the vocal tract during classical signing should be adjusted into a more contracted space in the vocal tract to create a sound fit for CCM singing (Kempfer, 2014:12).

Stark (2003:41) asserts that the larynx position most conducive to singing commercial music comfortably is in the same neutral position as when speaking or slightly raised to facilitate the “brighter, ‘twangier’ effect”. Jahn (2013:394) believes that “[a] singer with a flexible, relaxed larynx that sits relatively low naturally can lift the larynx when singing and the tone will be beautiful, free, and full of ‘top’”. She also suggests that, when singers who have been trained in a classical way of singing and want to venture into singing CCM, they should become proficient in performing with the larynx in a higher position (Jahn, 2013:396). She also warns that a larynx that is forced unnaturally downwards from a high position can result in an unsteady tone and too much vibrato (Jahn 2013:396).

Changes in the vocal tract lead to differences in the pressure of the breath flow (Kayes, 2014:28). Stark (2003:85) explains that “[b]elting requires[…]increased subglottal pressure”. This high subglottal pressure is the result of the vocal folds being pressed together for longer than usual (Kayes, 2014:158). The extended closure of the vocal folds occurs because of the increased muscle activity in the laryngeal mechanism. The raising, lowering and tilting of the cartilages in the larynx all involve muscles that are responsible for adducting and abducting the vocal folds. Tilting the thyroid, for example, can shorten and expand vocal folds in order to suit the tone quality for CCM. A singer “will generally find it easier to negotiate your first main gear change by engaging thyroid tilt” (Kayes, 2014:25).

Ultimately the changes in the subglottal pressure and the laryngeal position lead to changes in the supra-laryngeal spaces (resonance spaces). Gagné (2015:61), for example, believes that the more singers use the resonance spaces of the mouth during belting, the more they can relax the tightness around the vocal tract, which will
result in a healthier voice (Gagné, 2015:61). Furthermore, the changes in the supra-laryngeal spaces also can result in alternative vowel formation.

### 3.2.3 Vowel formation

Diction differs in every style of singing. Folk singing, for example, will require fewer demands on the consonants being sung, whereas Western art songs require precise diction and articulation (Boytin, 2014:62). Diction can be divided into three subsections, namely “pronunciation, enunciation, and expression” (LaBouff, 2007:3). Pronunciation refers to words being sung in a speech-like manner which the audience can understand. (LaBouff, 2007:3). Enunciation means the singer is able to “deliver the vocal text with ease, clarity, and minimal tension” (LaBouff, 2007:3). Lastly diction refers to the expression of the emotions and meanings of the text given by the composer in such a way that the singer should communicate meaning with the utmost clarity (LaBouff, 2007:3). Gagné (2015:61) also believes that diction refers to the pronunciation of the words during singing and that diction is very important during belting. In musical theatre, singing the verse usually follows the spoken dialogue between characters, which can be seen as just a prolongation of the communication (Presti, 2013:371). Usually this music is written in the lower range of singers and, therefore, should be performed in a manner of natural speech and with the vowels of the British language (Presti, 2013:372). The microphone helps the CCM singer to be heard and, because most of the CCM genres originate in America, they should emulate the American pronunciation of the vowels (Jahn, 2013:372).

The vowel formation when singing CCM is different from that of singing bel canto repertoire. Belting uses the vowels in a speech like model; with plain vowel sounds. These vowels are shorter and straighter with a bright tone and the consonants are less articulated (Jahn, 2013:373). Hass (2013:372) points out that, in belting, the “vowels are not elongated, but brighter and more horizontal, while the consonants are softer and sometimes even slurred”. All the different vowel shapes inside the mouth produce specific tones when one sings (Gagné, 2015:20). These changes are due to the resonance areas which are altered, something that also happens in everyday
speech (Gagné, 2015:20). Round and bright tones come from the inside of the mouth changing shape and producing a difference in the balance of the overtones which influence the sound (Gagné, 2015:20).

Sounds can be described as forward (when you focus on singing from the area known as the mask), dark (when you sing from the back of your throat which is broadened), nasal or twangy (when air exhales through your sinuses and resonates through your nose and mouth) (Gagné, 2015:20). It is very difficult to belt back vowels (Hass, 2013:402). According to Hoch (2014:31), a back vowel occurs when the mass of the tongue arches backwards with the tip facing downwards during diction. We need to shape the vowels round and broad in order to create space for resonance when singing high and loud notes (Gagné, 2015:44).

During singing in the lower voice, the words are closer to ordinary speech, but during belting, which is in the higher range, together with more pressure, there should be adjustments to the vowels (Gagné, 2015:61). The vowels should be sung more open and the consonants at the end of the phrases or notes should be emphasised (Gagné, 2015:61). Hass (2013:402) suggests that the tongue as well as the jaw should be kept forward.

As mentioned in the previous section, during covered singing (as in Western vocal art music) the larynx is lowered and the pharyngeal space is expanded. This lowering of the larynx and the expanded pharynx results in the vowel being darkened (Stark, 2003:85). During belting the vowels are not made darker as in the covering method (Stark, 2003:85) and the singer combines volume with a specific vowel shape, which will create a powerful sound (Gagné, 2015:29). The appropriation of the vowels also relates to the variation in tone quality (colour), which informs perception of vocal registers.

### 3.2.4 Registers

The term *register*, as relating to the *bel canto* technique, was already discussed briefly in Chapter Two. The statements below are based on the literature that examines the belting technique. We are reminded that the term *registers* is used to refer to the range
of the voice where the sound is natural and clear (Gagné, 2015:21). It can also be described as the place where the head and chest voice originate and in which a singer feels comfortable singing with the greatest resonance (Jahn, 2013:25). The main difference between the registers is the pitch and quality of the tone that is sung (Jahn, 2013:25). Different voice types can be assigned, for instance, soprano, alto, tenor, bass, coloratura etc. which are also indications of the requirements for specific roles in music theatre (Gagné, 2015:21). Belting is not listed as one of the registers but rather as a quality (Gagné, 2015:22).

When writing about training singers for musical theatre, Kayes (2014:86) points out that some voice teachers interchange the term range with registers. According to Kayes (2014:86), the voice registers are often described as chest (low) and head (high) or falsetto. Gagné (2015:22) speaks of a voice which is full or light. According to White (2011:22), the most important component of the belting sound lies in the use of registers. The most important technique which should be mastered is to sing with a smooth changeover through the registers (White, 2011:23). Through observations and studies of belt singers, McCoy (2007:548) found that belt singers sang in a light voice without any force. This seeming effortlessness is largely due to the help of the microphone. The singers sang light at the bottom, increased the energy while ascending and proceeded with a middle voice which sounded like speech, and then a bright and open sound at the top (McCoy, 2007:548). The timbre stayed even and no definite register changes were heard (McCoy, 2007:548). According to Edwin (2007:215), it is important for any singer, in both classical and CCM singing, to develop the whole vocal system, from the lowest to highest register with options of resonance, so that all the muscles involved become strong, flexible and coordinated, and the voice achieves longevity.

There are a number of segments within the larynx that pass through two essential positions when one sings (Gagné, 2015:22). This changeover is called passaggio and is comparable to the gear shifts of a car (Jahn, 2013:26). Kayes (2014:86) also refers to passaggi as gear changes. These changes occur where the vocal folds need more vibrations when singing in a higher range – the result of something that occurs quite naturally in the vocal tract of both male and female singers. Kayes (2005:86) describes
the first change for both male and female singers at about a “third of the way up through the female voice range and two-thirds of the way up through the male voice range”. An even changeover is necessary for expert singing (Jahn, 2013:26). For sopranos, this usually happens at approximately E5 or E-flat5, which can either be done smoothly and imperceptibly or roughly and noticeably (Jahn, 2013:27).

There seems to be a second change higher up, which will cause the “larynx to rise in order to stabilise for higher pitches” (Kayes, 2014:86). Kayes (2014:86), however, warns that a singer should learn to manage the changes to prevent the voice from cracking. Further changes such as the raising of the larynx and alternating the tension of the vocal folds can also cause the mechanism to become momentarily unsecure (Kayes, 2014:86).

In belting the singer can decide to stay in chest voice and not change over (Jahn, 2013:27). Belting feels different for men, because they sing mostly in their full voice, whereas women alternate between the full voice and the lighter voice more easily (Gagné, 2015:47). Edwin (2007:214) suggests that men who need to belt are requested not to change over through the vocal registers. Cotton (2005:167) describes the fact that, in order for a male to belt with the appropriate sound, they will have to take “the chest voice more prominently and actively into the upper-middle and top of the range”.

Gagné (2015:42) believes that, in order to sing safely with a belted voice, singers should learn to sing with a voix mixte (mixing the registers). The term suggests that one employs a combination of the muscles used when singing in the chest voice and higher register (Gagné, 2015:42). According to Gagné (2015:43), there are a lot of different tones included in the mixed voice and most of these tone qualities are formed through the different shaping of the vowels (Gagné, 2015:43). A mixed voice sound during belting is placed forward in the mouth and, through different shapes of the mouth and the tongue, a bright sound with higher volume and frequency is created (Gagné, 2015:43). According to Cotton (2005:167), this technique will brighten up the voice and approach a sound of yelling if required. “The maneuvering from the chest voice into the middle register (mix) is the key to singing CCM” (Presti, 2013:370).
3.2.5 Vibrato

Vowel formation and the specific use of vibrato are both part of the vocal technique of the belting style but it is important that this should be done in a healthy way for the singer (Kempfer, 2014:28). An important skill for any singer is to learn to control the vibrato. This is also the case for CCM singers. According to Soto-Morettini (2014:30), vibrato can either benefit the voice when it is smooth and under control, or be an inconvenience when the vibrato is too fast and lacking control (Soto-Morettini, 2014:30). Keidar (2013:372) explains that, “[i]n order to authentically and effectively sing CCM, one of the most important vocal abilities that the classically trained singer must master is singing without vibrato” (Keidar, 2013:372). Presti (2013:372) shares this opinion and, according to Soto-Morettini (2014:30) vibrato can be absent during a fine performance of CCM. In CCM there are many popular singers, such as Paul McCartney, who seldom use vibrato (Soto-Morettini, 2014:32).

Soto-Morettini (2014:60) claims that “belting is much the same sensation as calling out to someone at a distance, but with pitch, sustain and (sometimes) vibrato added”. Many singers adopting different styles use a “vibrato fade”, “because vibrato speeds and width can vary enormously, the sounds of vibrato fade offsets can also vary” (Soto-Morettini, 2014:92). During the vibrato fade the end of a sound can also be managed according to the affect desired (Soto-Morettini, 2014:93). When a tone starts, a singer can decide to sing with or without vibrato (Soto-Morettini, 2014:92).

According to Jahn (2013:32), no vibrato is present when singing naturally versus spontaneous vibrato during trained singing. However, this does not mean that there should never be any vibrato in CCM music. The different styles of CCM singing can usually be associated with how fast and how wide the vibrato is sung (Soto-Morettini, 2014:100). In jazz and rock music, the vibrato rate is faster than for instance “big show-time voices” (Soto-Morettini, 2014:100). Jazz singers hardly use vibrato, but keep it for specific colour at the end of a phrase (Presti, 2013:373). While it is not required to sing with vibrato there are Gospel and folk singers who make use of vibrato in a specific manner (Presti, 2013:373). If a singer is able to manage how fast the rate of the vibrato can be, it “allows a far greater stylistic flexibility” (Soto-Morettini, 2014:31). Gospel
singers measure the vibrato in triplets, whereas folk singers will use it in a more relaxed and mellow way (Presti, 2013:373).

In CCM music vibrato is also used to add colour, for instance “warmth, excitement, energy” to the music and words being sung (Keidar, 2013:373). CCM singers can change the quality or colour of the tone by adding “breathiness, twang, rasp, straight tone, vibrato etc.” (Keidar, 2013:370). Vibrato can be used for applying vocal shades or emotions to a tone, for instance, to add affection, exhilaration or vibrancy (Presti, 2013:372).

The cricoid cartilage can move forward, which can help to sing with vibrato (Kayes, 2007:23). However, when problems involving the muscles used for singing are present, the vibrato can be affected, for example, “a slowing of the vibrato rate, widening of vibrato extent (wobble), and unsteady vibrato (Keidar, 2013: 360). If a singer uses too much breath, it can develop into a sound with too much vibrato (Kayes, 2007:127). Soto-Morettini (2014:31) states that voice specialists suggest that, in order to obtain good vibrato, the breath control should be smooth without any strain in the area in and around the larynx. Subglottal pressure demands hard work on tense muscles, which leads to a tone deprived of vibrato (Stark, 2003:85).

Tension in the tongue, a strong and sizeable muscle, causes many problems for CCM singers, because the larynx cannot ascend for higher tones (Hass, 2013:391). This tension is visibly seen when the tongue quivers and produces a fluctuation or an unmanageable vibrato (Hass, 2013:392). This impairs a natural tone and vibrato, and results in difficulties relating to producing the high notes which are necessary when singing in the head voice and during belting (Hass, 2013:392). Taking in too much air can produce uncontrolled vibrato. This uncontrolled vibrato can be remedied by decreasing the breath intake and by increasing the use of the anchor muscles (Kayes, 2004:127). The anchor muscles are attached to the ribs and spine, and together with the diaphragm in the pelvis they help to stabilize the body, which enhances good breathing during singing (Kayes, 2004:80).
3.2.6 Vocal embellishment

As mentioned in the previous section, the belting style is characterized by a specific use of vibrato (Kempfer, 2014:28). It can be argued that the use of vibrato might be regarded as embellishment for CCM. However, this is not the only form of embellishment in CCM.

From the brief discussion about embellishment in bel canto music, it is clear that the art of performing coloratura passages is held in high esteem in Western art music. Miller (2000:56) asserts that all singers should be able to use their voices freely in order to sing rapid melismata and embellishments. Just as in the case of Western art music, there are vocal embellishments that contribute to the way in which CCM music can affect an audience. Runs (ascending or descending scales), licks (reminiscent of little cadenze in Western art music) or riffs (similar to coloratura passages) are present in CCM and, according to Chandler (2014:43), they can be commonly found in African-American CCM. A lick might consist of just 3 or 4 notes or it can be over 2 octaves long (Chandler, 2014:43). Chandler (2014:43) points out that these runs are built from the pentatonic major and minor scales, as well as the hexatonic scale. Schonbrun (2003:106) explains that a hexatonic scale, which “is a minor pentatonic scale with an added second” sounds more melodic, as opposed to the pentatonic scale.

3.3 Cautionary thoughts about belting

In all fairness, one should point out that it is not only belting that can lead to a damaged voice, but any style of singing which is done carelessly with a poor technique (McCoy, 2013:181). Gagné (2015:ix) believes that, “[w]hen studying any singing style, it is important to honor both the advantages and limitations of your voice’s physical structures”. This author also warns that belting can be overtiring for the singer and the audience and, therefore, belting should be paired with more toned-down applications in order to create balance and texture in this creative skill (Gagné, 2015:3). She points out that belting is usually taught to advanced singing students, because of the fear of possible damage (Gagné, 2015:7).
Cotton (2005:167) warns of pitfalls for both male and female belters and suggests they should receive great technical training through expert advice in order to maintain healthy voices. Streeton and Raymond (2014:134) are of the opinion that it is necessary to maintain a true sound through practising the basic concepts of the fundamental technique. Before trying to attempt a belting tone, one should develop a supple body and vocal tract (Streeton & Raymond, 2014:134). Technical flaws during belting can result in a sudden weakening of vocal health (Streeton & Raymond, 2014:134). McCoy (2007:548) also lists anatomical manifestations such as “clenched jaws, wobbling tongues, tight neck muscles, heaving chests, and elevated larynxes” and suggests that these aspects are associated with unhealthy belting. Popeil (2007:78) suggests that the firm closure of the vocal folds is welcomed, but warns against the excessive compressing of the vocal folds during belting.

Because of the power and force with which the high notes are sung in belting (Gagné, 2015:59), the vocal folds come together much regularly. According to Gagné (2015:59), this is the reason why women are more susceptible to emerging problems than men; their voices are higher than those of men (Gagné, 2015:59).

3.4 Conclusion

In the introduction to this chapter I stated that it will consider belting as a singing technique used in contemporary commercial music (CCM) by male, as well as female singers. I also indicated that I shall address the concept of belting with its characteristics. Some cautionary thoughts associated with belt singing concluded this chapter. The exploration of this concept showed that the breathing process, the position of the larynx, the vowel formation, the vocal registers, the use of vibrato and the embellishments of the melodic lines were all aspects that deserved attention. The unique formation of the vowels in CCM performance is part of the style’s character, as is the specific use of vibrato. The vibrato in CCM singing differs from one style to another. The ability of the voice to move freely while performing riffs and runs allows the singer to affect the audience. It would seem that, by having the knowledge and technique necessary to master the skill of mixing the vocal registers, as well as to know how to relax the tightness around the vocal tract – even while singing with a
higher laryngeal position – will not only lead to a healthier singing voice, but also to the production of a greater variety of tone.

The discussion in the chapter also made it clear that not only belting, but any style of singing which is done using a poor technique could lead to damage to the voice. Therefore, it is suggested that the belting technique should be taught by experts who know how to facilitate the use of a supple body and vocal tract, together with a technique that is conducive to vocal health.

The way in which the concepts mentioned above are relevant to bel canto singing and belting respectively will be discussed in the article in Chapter Five. Chapter Four presents the data and offers an exposition of the coding and categorizing that were done upon completion of the literature review.
CHAPTER 4: DATA PROCESSING

This chapter features the tables that were created during the process of sorting through the information collected during the literature review reported in the previous two chapters. The coding done during the initial organization of the data led to the emergence of categories and sub-categories. The purpose of coding the data is to select the most important information in order to understand and interpret the literature that has been studied on each of the main concepts of the research study, namely adolescent voices, bel canto and belting. Furthermore, a comparison between bel canto and belting is done by listing perceptions about differences and similarities between these two concepts.

The categories that emerged during the coding of each of the concepts are depicted in Table 1 below.

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<tr>
<th>CONCEPT</th>
<th>Adolescent voice</th>
<th>Bel canto</th>
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<td>Warnings</td>
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Table 1: Concepts and categories

Further coding (Table 2) of the information about each concept led to the emergence of sub-categories (Table 3).
4.1 Adolescent voices

4.1.1 Coding

<table>
<thead>
<tr>
<th>Concept</th>
<th>Changes</th>
<th>Vulnerability</th>
<th>Training</th>
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</thead>
<tbody>
<tr>
<td>(Sacks, 2003:577) Categorization (Thurman &amp; Klitzke, 1994:227)</td>
<td>Male and female singers’ voices change (Barlow &amp; Howard, 2002:27)</td>
<td>Adolescent’s most sensitive period (Smith-Vaughn et al., 2013:405). Changes during adolescence – “place additional strain on their voice and larynx, resulting in maladaptive vocal behaviours” (Benninger et al. 2015:7)</td>
<td>Belting popular since the 20th century – adolescents in South Africa seem to aspire to become the next winner of Idols or The Voice. Demand singing lessons, especially learning how to belt, significant</td>
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<td>“vocal folds thicken and lengthen, ligament and laryngeal cartilages develop, and vocal tract expansion takes place” (Cooksey, 1992:12)</td>
<td>Speaking loudly over loud music; loud glottal attack; throat clearing; grunting; yelling; laughing hard (Smith-Vaughn et al., 2013:404)</td>
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<td>Increase in lung capacity, the lung tissue and the chest wall (Thurman &amp; Klitzke, 1994:229) Changes in the vocal range, the tessitura, the quality of the voice, the development of the registers, the fundamental frequencies of the speaking voice (Cooksey, 1992:12) Increase in production of hormones which relates to sexual maturity (Davids &amp; LaTour, 2012:201)</td>
<td>Loud talking, vocal fatigue or injury; cheerleading; singing excessively at sporting events; choir singing; singing popular music in bands. Thurman and Klitzke (1994:226), the world of the adolescent is loud. Speaking or singing outside comfortable range (tessitura) – muscular tension: result is fatigue, swelling of vocal folds</td>
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<td>Thurman and Klitzke (1994:241–243) clinical information – voice professionals, teachers and educators who believe that belting can potentially harm a voice, particularly young voices</td>
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speech-like sound produced with comfort up to top vocal range in both male and female |
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<td></td>
<td>Belting taught to advanced singing students – fear for possible damage (Gagné, 2015:7)</td>
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<td>Technical training necessary to maintain healthy voices (Cotton, 2005:167)</td>
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<td>Friar (1999:28) – voice teacher guides adolescents with knowledge of contemporary music performance; facilitate transitional or mutational phase</td>
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<td>Teach how the voice matures warns about tension or stressed singing (Cooksey, 1992:38)</td>
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<td>Avoid singing too high and for extended periods at a time (Miller, 2000:30)</td>
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<td>Thurman and Klitzke (1994:243–244) technical skills that singers who belt need – well-conditioned head register, methods of voice care and</td>
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</table>
protection, general body conditioning, laryngeal conditioning
Repertoire – plays important role in vocal health (Smith-Vaughn et al., 2013:404)
Benninger et al. (2015:78) advise “proper warm-up exercises, hydration, diet and voice rest”

Table 2: Coding of literature on adolescent voices

Upon completion of the coding, several cub-categories could be identified in the discussion about the adolescent voice (Table 3 below).

<table>
<thead>
<tr>
<th>Concept</th>
<th>Changes</th>
<th>Vulnerability</th>
<th>Training</th>
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<tbody>
<tr>
<td>Definition</td>
<td>Changes in the vocal tract</td>
<td>Bad habits that lead to vulnerability</td>
<td>Perceptions about training</td>
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<td>Characteristics of changes</td>
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<td>Teacher’s role in training</td>
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<td>Reasons for changes</td>
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<td>Technical skills needed for singing</td>
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</tbody>
</table>

Table 3: Sub-categories for adolescent voice
Bel Canto

### 4.2.1 Coding

<table>
<thead>
<tr>
<th>Concept</th>
<th>Breathing process</th>
<th>Legato &amp; coloratura</th>
<th>Embellishment</th>
<th>Vibrato</th>
<th>Chiaroscuro</th>
<th>Registers</th>
<th>Vowel formation</th>
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<tr>
<td>and 18th centuries</td>
<td>the singer tools to vary the intensity and voice quality, and to sing with a seamless legato and without apparent register transition</td>
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<td>Decline of castrato singers</td>
<td>Begin with the act of inhalation – lungs are filled with air to their maximum – subglottic pressure is low (Miller, 2004:14)</td>
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<td>Rebirth of Bel Canto singing, (Robertson-Kirkland, 2013:0)</td>
<td>Obtain perfect tone through more efficient breathing process (Miller, 2000:39).</td>
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<td>Higher rate of energy through breath control than ordinary</td>
<td>through accomplishing the onset and release (Miller, 1996:102)</td>
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<td>Sustain sound on vowels – “avoiding the prolongation of consonants (keep them crisply energized) and postponing the final vowel of a diphthong by giving primary attention to the first vowel” (Ware, 1997:170)</td>
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<td>Portamento – Stark (2003:165) voice moving smoothly from one pitch to the other, passing the other notes slower than</td>
<td>Embellishment, contributes to the affective value of a performance (Stark, 2003:188).</td>
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<tr>
<td>Trill – larynx intentionally oscillates with raised pitch (Miller 2000:140)</td>
<td>Vibrato – tool to help singers express emotions (Toft, 2013:85)</td>
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<td>Important skill – control the vibrato</td>
<td>Miller (2004:125) vibrato natural – appropriate</td>
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<td>Miller (1996:10)</td>
<td>in the wall of the pharynx, epiglottis and the root of the tongue (Miller, 2004:121)</td>
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<td>“periodic muscle relaxation during heavy-duty activity” (Miller, 2004:122)</td>
<td>Vibrato – tool to help singers express emotions (Toft, 2013:85)</td>
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</table>
| Vibrato – tool to help singers express emotions (Toft, 2013:85) | Brightness – tight closure of glottis – produce a “tone that is rich in high-
| Integration of head, chest and middle (mixed) registers – (Ware, 1997:116) | Volta (2005:117) – required to align vowels |
| Vowel formation can be described as somewhat elongated and the consonants are pronounced very clearly (Hass, 2013:372) | Vowel formation can be described as somewhat elongated and the consonants are pronounced very clearly (Hass, 2013:372) |
| Every vowel constructs its particular form of the vocal tract (Miller, 2004:65) | Every tone has its own quality, which is accompanied by the frequency
speech (Miller, 2000:36).

Longer breathing phase
Diaphragm, muscles of the abdominal wall, thorax (Miller, 2000:36; Thompson, 2014:15).

Spoto (2016:55) “breathing for singing is a complex coordination”
Resistance of the pressure of the breath (Stark, 2003:119).

Rate of exhaling delayed – apoggio (Miller, 2004:14; Miller 2000:36).

when singing legato
Development of flexibility key in vocal technique (Robertson-Kirkland, 2013:7).
Voice needs flexibility during quick, melismatic phrases (Miller, 2000:56)
Agility through “clean onset, release, and quiet breath renewal” (Miller, 2000:56)
Miller (2000:56) suggests singing triadic vocal exercises staccato and legato – imagining abdominal sensations –

breath management and vocal expression
Maintain balanced laryngeal position during vibrato (Miller, 2004:122)

frequency components” (Stark, 2003:34)
Larynx elevated – shortens vocal tract (Miller, 1996:82)
Vowel modification when pitch rises – keep acoustic balance (Miller, 1996:12)
Register unification

delayed exhalation rate (Miller, 2004; Miller 2000)
Elongated vocal folds after secondo passaggio (Miller, 2004:29)
Cover – tenors (Stark, 2003:56)
Stark (2003:120) – interaction between breath pressure, glottal resistance, “vocal tract adjustments (especially the

Overtones also add to the characteristics of the tone such as “brilliance, shrillness, or thickness” (Reid, 1950:38)
Vowels – sung from the front of the mouth with the tongue and jaw focusing to the front (Hass, 2013:402)
Examples [u], [o] and [a] (Hoch, 2014:31)
Singer should strive for clear articulation of language – preserving a tone of chiaroscuro –

and intensity of energy distributed.

Vowels – sung from the front of the mouth with the tongue and jaw focusing to the front (Hass, 2013:402)
Examples [u], [o] and [a] (Hoch, 2014:31)
Singer should strive for clear articulation of language – preserving a tone of chiaroscuro –
laughter and rapid breathing (Miller, 2000:57)

vertical laryngeal position) gives the singer tools to vary the intensity and voice quality, and to sing with a seamless *legato* and without apparent register transition* only possible if shape of vocal tract correlates with the vowel formation (Miller, 2004:66)

Robertson-Kirkland (2013:4) – “long and complex exercises, similar in style to the exercises written for instrumentalists” performed on either the vowels [a], [e] and [u] or by using the solfa (Robertson-Kirkland, 2013:4) build the flexibility of the voice – conducive for vocal technique for all singers

Exercises enable singers to master
the vocal technique and breathing process (Robertson-Kirkland, 2013:5)

Table 4: Coding of information about bel canto

The sub-categories that emerged during the coding of the information about bel canto are indicated in the Table 5.

<table>
<thead>
<tr>
<th>Description</th>
<th>Breathing process</th>
<th>Legato &amp; coloratura</th>
<th>Embellishment</th>
<th>Vibrato</th>
<th>Chiaroscuro</th>
<th>Registers</th>
<th>Vowel formation</th>
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<tbody>
<tr>
<td>Definition</td>
<td>Description</td>
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<td>Origin</td>
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<td>Description</td>
<td>Description</td>
<td>Description</td>
<td>Definition</td>
<td>Theories</td>
<td>Description</td>
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<td>Singing vs speaking</td>
<td>Definitions</td>
<td>Purpose</td>
<td>Purpose</td>
<td>Technical skills</td>
<td>Passaggio</td>
<td>Technical skills</td>
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<td>Muscles involved</td>
<td>Technical skills</td>
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<td>Technical skills</td>
<td>Laryngeal position</td>
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<td></td>
<td>Breath control and support</td>
<td>Definitions</td>
<td>Purpose</td>
<td>Purpose</td>
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</table>

Table 5: Sub-categories for bel canto

67
4.3 Belting

4.3.1 Coding

<table>
<thead>
<tr>
<th>Definition</th>
<th>Breathing process</th>
<th>Laryngeal position</th>
<th>Vowel formation</th>
<th>Registers</th>
<th>Vibrato</th>
<th>Embellishment</th>
<th>Warnings</th>
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</thead>
<tbody>
<tr>
<td>Belting – specific quality – intense emotion and controlled technique (Streeton &amp; Raymond, 2014:134)</td>
<td>Amount of air informs type of tone produced (Hass, 2013:290)</td>
<td>Breathing process allows free-hanging larynx</td>
<td>CCM performed emulating natural speech</td>
<td>Descriptions of registers and passaggio correlate those in bel canto</td>
<td>Use of vibrato informs timbre of sound – adds nuances and vibrancy – depicts emotions, e.g. affection, exhilaration</td>
<td>Embellishments contribute to affective value of CCM</td>
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<tr>
<td>Davies and Jahn (2004:65) “speaking voice, as his singing voice, is his ‘signature’”</td>
<td>Breath support/breath control for sustained singing – use the pelvic floor and muscles, e.g. diaphragm (Hass, 2013:390), upper abdominal muscles,</td>
<td>Jahn (2013:395) laryngeal position is fundamental to performing CCM</td>
<td>Jahn (2013:373) vowels shorter and straighter, bright tone “more horizontal, while the consonants are softer and sometimes even slurred” (Hass 2013:372)</td>
<td>Edwin (2007:215) – regardless of style – ensure all muscles involved develop – strength,</td>
<td>Runs (ascending or descending scales), licks, riffs (Chandler, 2014:43)</td>
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<td>“more horizontal, while the consonants are softer and sometimes even slurred” (Hass 2013:372)</td>
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<td>Runs built from pentatonic major and minor</td>
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<td>“chest voice is carried beyond the point where it would ordinarily switch register”</td>
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<td>Control of vibrato – important skill for any singer</td>
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<td>Control breathing process – using diaphragm,</td>
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<td>Embellishments contribute to affective value of CCM</td>
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<td>Miller (2000:56) all singers – vocal flexibility and agility – perform rapid melismata &amp; embellishments</td>
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<td>Runs (ascending or descending scales), licks, riffs (Chandler, 2014:43)</td>
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<td>Runs built from pentatonic major and minor</td>
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<td>Not only belting leads to damaged voice – any style of singing which is done carelessly with a poor technique (McCoy, 2013:181). Hass (2013:402) internationally acknowledged voice pedagogue in all the CCM genres, describes belting as something exhilarating that</td>
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<tr>
<td>Tendency to use voice outside the natural frequency of ordinary speech</td>
<td>Intercostal muscles (Gagné, 2015:15)</td>
<td>Raised larynx and increased muscle tension in supraglottal area</td>
<td>Difficult to belt back vowels (Hass, 2013:402)</td>
<td>Abdominal muscles and intercostal muscles – ensure controlled vibrato</td>
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<td>Stark (2003:75) comparison belting squaiato (coarse tone)</td>
<td>Kempfer (2014:59) Excessive breath = in belting “will sound forced, and could potentially be damaging to the voice”</td>
<td>High larynx applied on occasion for special effects</td>
<td>Light at bottom, increased energy while ascending – middle voice sounded like speech – bright and open at the top (McCoy, 2007:548)</td>
<td>Light at bottom, increased energy while ascending – middle voice sounded like speech – bright and open at the top (McCoy, 2007:548)</td>
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<tr>
<td>Stark (2003:85) cross-over, musical theatre &amp; CCM</td>
<td>Air pressure rises upwards from the lungs through vocal tract</td>
<td>Lower larynx intentionally to avoid spasms in external muscles (Davies &amp; Jahn, 2004:64)</td>
<td>Changes in supra-laryngeal spaces</td>
<td>Timbre stayed even – seamless transition between registers (White, 2011:23; McCoy, 2007:548)</td>
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<td>Styles of CCM – popular music, Rhythm and Blues (R&amp;B), Country music, rock music and jazz (Popeil, 2007:77)</td>
<td>Singer experiences subglottal pressure Presses voice through notes – increasingly tighter as they ascend (Gagné, 2015:1)</td>
<td>Extended capacity during contraction – vocal folds to vibrate freely</td>
<td>Supra-laryngeal spaces result in less tightness in vocal tract &amp; alternative vowel formation</td>
<td>Different styles of CCM singing usually associated with speed and width of vibrato (Soto-Morettini, 2014:100)</td>
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<td>Belting – singer combined volume with specific vowel shape – creates flexibility, coordination – flexibility and longevity</td>
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<td>Managinig speed of vibrato “allows a far greater stylistic flexibility (Soto-Morettini, 2014:31)</td>
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<td>Retraction of the vocal folds needed for higher quality voice production in belting (Kayes, 2014:13)</td>
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<td>Mixt voix suggests combination of muscles used when singing in chest voice and higher register (Gagné, 2015:42)</td>
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<td>Lot of different tones included in mixed voice – most tone qualities result of different shaping of vowels (Gagné, 2005:43)</td>
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<td>Rock music – faster vibrato rate, jazz singers use vibrato for special effect at end of phrase; musical theatre slower vibrato rate (Soto-Morettini, 2014:100; Presti, 2013:373)</td>
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<td>Any type of singing – breath support – operative operation of muscles (Kayes, 2014:28) Requires excessive strength or tightening of muscles involved (Gagné, 2015:15)</td>
<td>more (Gagné, 2015:59) Changes in vocal tract – informs breath flow Kempfer (2014:12) more contracted space in vocal tract for CCM Keep body and vocal tract supple (Streeton &amp; Raymond, 2014:134) Avoid excessive compressing of the vocal folds, especially in higher registers – detrimental to vocal health (Popeil, 2007:78) McCoy (2007:548) “clenched jaws,</td>
<td>abilities that the classically trained singer must master is singing without vibrato” Presti (2013:372); Soto-Morettini (2014:30) agrees Straight tone singing (without vibrato) applied for special effects Avoid tension in laryngeal muscles – leads to “a slowing of the vibrato rate, widening of vibrato extent (wobble), and unsteady vibrato” (Keidar, 2013:360)</td>
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wobbling tongues, tight neck muscles, heaving chests, and elevated larynxes” – not healthy belting

Table 6: Coding of information about belting

Table 7 summarises the sub-categories that emerged during the process of coding the information about belting.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Breathing process</th>
<th>Laryngeal position</th>
<th>Vowel formation</th>
<th>Registers</th>
<th>Vibrato</th>
<th>Embellishment</th>
<th>Warnings</th>
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Table 7: Sub-categories for belting
## 4.4 Comparison

### 4.4.1 Coding

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<th><strong>Concept</strong></th>
<th><strong>Bel canto</strong></th>
<th><strong>Beltng</strong></th>
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</table>
| **Breathing process** | Ideal sound (forward, free, resonant)—effective breathing process  
Breath support for any type of singing demands operative operation, coordination and balance of muscles (diaphragm, muscles of the abdominal wall) during inhalation and exhalation  
Rate of exhaling delayed – gives feeling to sing on motions of inspiration  
Trained singers use the air in their lungs more efficiently by reducing volume—enhancing airway productivity  
Subglottal pressure low – air flows through vocal folds with least resistance | Breathing process for sustained singing – involve pelvic floor, diaphragm, *latissimus dorsi, quadatrus lumbarum* specific muscles  
Breath support and breath management vary according to tones and timbres required  
Support for belting – contrary to support used for vocal Western art music  
Belting – singer needs little air — vocal folds closed for longer period — no need for large amount of air to be taken in.  
Subglottal pressure higher – result of vocal folds being pressed together for a longer period of time |
| **Laryngeal position** | Altering vocal tract – change in vocal resonance  
Laryngeal position altered – vocal tract lengthens and shortens – sound changes  
Larynx can move in various directions – neutral (free-hanging), move up or down, tilt forward or backward  
The forward tilt of the thyroid cartilage – vocal folds activated for singing higher notes  
Forward tilt of cricoid cartilages shortens vocal folds (Kayes, 2004:23) | Laryngeal position altered – vocal tract lengthens and shortens – sound changes  
Larynx can move in various directions – upwards and downwards together with other movements during singing  
Raised larynx and increased muscle tension in supraglottal area  
The forward tilt of the thyroid cartilage – vocal folds activated for singing higher notes |
| Artists and pedagogues prefer lowered larynx (Kayes, 2014:24) – warmer timbre  
Retraction – feeling of openness and space inside the larynx (Kayes, 2014:12) when singing  
Extended capacity during contraction in larynx gives room for vocal folds to vibrate freely (Kayes, 2014:13)  
Cover – tenors (Stark, 2003:56). | Forward tilt of cricoid cartilages shortens vocal folds (Kayes, 2004:23)  
Most conducive laryngeal position for singing CCM music – neutral (as in speech) or slightly raised – facilitates brighter, ‘twangier’ effect” (Chandler, 2014:41)  
Power and force with which the high notes are sung in belting – vocal folds come together much more (Gagné, 2015:59)  
Lower larynx intentionally to avoid spasms in external muscles (Davies & Jahn, 2004:64) |
|---|---|
| **Vowel formation** | **Alliance between text and tone – expressivity**  
Clear articulation: Vowel formation – elongated  
Consonants pronounced very clearly (Hass, 2013:372)  
Western art music – vowels aligned  
Vowels sung in front of mouth – mass of the tongue forward, jaw relaxed and to the front (Hass, 2013:402)  
Generally use Italian vowels [i], [e], [a], [o], [u] (Hoch, 2014:31)  
*Chiaroscuro* achieved when the shape of vocal tract correlate with vowel formation (Miller, 2004:66)  
Vocal tract is shaped according to vowel construction – affects balance of overtones – informs quality of tone  
| **Natural speech-like model**  
American and English vowels  
Lot of different tones included in mixed voice – most tone qualities result of different shaping of vowels  
Vowels are shorter and straighter with a bright tone and consonants less articulated  
Vocal tract shaped according to vowel construction – affects balance of overtones – informs quality of tone  
Vowels shaped round and broad in order to create space for resonance when singing high and loud notes  
Vowel modification |
| **Registers** | **Main difference between registers– pitch and quality of tone (Jahn, 2013:25)**  
Kayes (2005:86) – voice registers – chest (low) and head (high) or falsetto |
Two-register theory – chest and head  
Head, chest and middle (mixed) register integrated – Three-Register theory (Ware, 1997:116)  
Mixte voix  
*Primo* and *secondo passaggio*  
*Zona di passaggio*

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<td><em>Bel Canto</em> singer vibrato synonymous</td>
</tr>
<tr>
<td>Vibrato – initially applied as embellishment (Sell, 2005:116) – tool to express emotions (Tone, 2013:85)</td>
</tr>
<tr>
<td>Physiologically exactly the same – vibration of vocal folds</td>
</tr>
<tr>
<td>Control of vibrato – important</td>
</tr>
<tr>
<td>Control breathing process – ensure controlled vibrato</td>
</tr>
<tr>
<td>Western art music – laryngeal position free-hanging and balanced</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Embellishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embellishment – contributes to affect value of performance (Stark, 2003:188)</td>
</tr>
</tbody>
</table>
| Used to strengthen the words – intensify expression (Elliott, 2006:21).  
  *glissandi, portamento, trills, coloratura passages, cadenzas* |
| Singer needs vocal agility and flexibility |
| *Messa di voce* |

| Chest register – pushed beyond *passaggio* into head register  
*Mixt voix*  
*passaggio* correlates with *Bel Canto*  
Continuously contracting the chest register muscles (Davies & Jahn, 2004:63) |

| Embellishments contribute to manner in which CCM music affect audience |
| Runs, licks and riffs |
| Singer needs vocal agility and flexibility |

Table 8: Coding of information about similarities and differences between *bel canto* and belting
The sub-categories that emerged during the process of coding the information about the similarities and differences between *bel canto* and belting are summarized in Table 9.

<table>
<thead>
<tr>
<th>Breathing process</th>
<th>Laryngeal position</th>
<th>Vowel formation</th>
<th>Registers</th>
<th>Vibrato</th>
<th>Embellishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscles involved</td>
<td>Length of vocal tract</td>
<td>Italian vs American and English vowels</td>
<td>Theories Mix__voix</td>
<td>Physiology Purpose Control Differences</td>
<td>Purpose Types</td>
</tr>
<tr>
<td>Breath support and breath control</td>
<td>Position of larynx</td>
<td>Duration of vowels</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Subglottal pressure</td>
<td></td>
<td>Relationship between vowels and resonance spaces</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Vowel modification</td>
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</tr>
</tbody>
</table>

Table 9: Sub categories of comparison between *bel canto* and belting

The chapter which follows (Chapter Five) is the article that is intended to be the ultimate research report of this study.
CHAPTER 5: ARTICLE

5.1 Cover letter

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Prof. Marc Duby
The Editor-in-Chief
Muziki: Journal of Music Research in Africa

Dear Prof. Duby

SUBMISSION OF ARTICLE

Attached to this letter is an article that I wish you to consider for publication in Muziki: Journal of Music Research in Africa. The title of the article is The use of bel canto techniques to develop healthy vocal techniques in adolescent singers who belt.

In consideration of Muziki: Journal of Music Research in Africa taking action in reviewing and editing my submission, the author(s) undersigned hereby indicates her material participation in the study and transfers, assigns, or otherwise conveys all copyright ownership to the publishers, in the event that such work is published in the above-mentioned journal.

I also declare that there is no conflict of interest and confirm that this work is original and has not been used I prior presentation for publication.

I am looking forward to hearing from you soon.

Yours sincerely

Marguerite van Wyk
5.2 Title page

Title

The use of *bel canto* techniques to develop healthy vocal techniques in adolescents who belt.

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THE USE OF BEL CANTO TECHNIQUES TO DEVELOP HEALTHY VOCAL TECHNIQUES IN ADOLESCENT SINGERS WHO BELT

ABSTRACT

Competitions such as Idols, The Voice, The X Factor and America's Got Talent inspire many adolescent singers to venture into the world of the performing arts. Mastering the art of belting is necessary for singers who want to perform contemporary commercial music. However, there are some experts who warn that, if not applied carefully, this technique might damage the voice, especially the young adolescent voice that is still not fully developed. The bel canto technique is used by singers who perform Western art music at relatively high intensity for extended periods of time (as in opera performance), while maintaining vocal health and longevity. The purpose of the conceptual study on which this article is based is to explain how bel canto techniques might be used to develop healthy vocal techniques in adolescents who want to belt. Data were collected by systematically scrutinizing the literature on the main concepts, namely the adolescent voice, bel canto and belting. The data were subjected to coding in order to determine categories and sub-categories. Based on the analysis of the data, we inferred that adolescents who want to perform contemporary commercial music using the belting technique might benefit from first mastering the breathing process, as well as the vowel formation used in bel canto. Once they have an understanding of how it feels to sing in a way that feels more natural, they can begin to attempt the belting technique, which requires more muscular activity.

INTRODUCTION

This conceptual study explores how bel canto techniques might be used to develop a healthy vocal technique in adolescent singers who belt when singing contemporary commercial music. The afore-mentioned statement contains the three main concepts to be considered, namely adolescence (specifically as pertaining to the voice), bel canto and belting. Sacks (2003, 577) describes adolescence as the beginning of normal physiological puberty. Thurman and Klitzke (1994, 227) categorize adolescence into three phases, namely “early adolescence (12–15 years), middle adolescence (15–18 years) and late adolescence (18–21) years”. The term bel canto refers to a style characterized by specific technical traits. It originated in the Baroque period (1685–1750) and continues to be used by trained singers who specialize in
Western art music (Dufault 2008, 23). Belting, on the other hand, involves a “kind of intense vocal production that allows the voice to carry easily, but does not have the characteristics of a classical sound” (Hoch 2014, 211). This technique is used by singers who perform contemporary commercial music (CCM), a phrase that designates various genres, including “musical theatre, rock, pop, country, jazz, blues, R & B, gospel, world music” (Hoch 2014, 57).

During adolescence, both male and female voices go through a transitional phase and develop dramatically, with significant physical changes in the vocal tract (Barlow & Howard 2002, 67). The voice change occurs gradually as “vocal folds thicken and lengthen, ligament and laryngeal cartilages develop, and vocal tract expansion takes place” (Cooksey 1992, 12). It is not only the vocal tract that undergoes changes during adolescence; the lung capacity also increases significantly, as does the lung tissue and the chest wall (Thurman & Klitzke 1994, 229). The development of the adolescent voice is further characterised by changes in the vocal range, the tessitura, the quality of voice, the development of vocal registers and the fundamental frequencies of the speaking voice (Cooksey 1992, 12). One of the main reasons why the adolescent voice changes is the increase in the sex hormones such as androgen, oestrogen and progesterone (Davids & LaTour 2012, 201). It is especially in the young male voices that the lowering of voice frequency (due to androgen) leads to involuntary changes in the vocal registers. These changes require a significant measure of adaptation by the adolescent male singer (Smith-Vaughn et al. 2013, 204). Changes in the female voice include the lowering of the speaking voice, breathiness, voice cracking, register breaks, decreased pitch and strenuous singing with heavier and rougher voice qualities (Thurman and Klitzke 1994, 239).

Smith-Vaughn et al. (2013, 405) point out that the adolescent’s voice is at its most vulnerable during the transitional phase. Their views are in agreement with other authors, such as Thurman and Klitzke (1994, 226), who caution about the risk of vocal fatigue or injury due to loud talking, yelling, cheerleading, singing excessively at sporting events and choir singing, as well as singing popular music in bands. Smith-Vaughn et al. (2013, 404) also list other behaviours that can cause damage to a young voice, such as a loud glottal attack, throat clearing, grunting, yelling and laughing hard. Speaking or singing outside of a comfortable tessitura can result in
muscular tension, fatigue and swelling of the vocal folds and, therefore, the danger of permanent damage increases (Smith-Vaughn et al. 2013:404; Emmons and Chase 2006, 313).

The technique known as “belting” has been particularly popular since the 20th century. As in a number of other countries, many adolescents in South Africa seem to aspire to become the next winner of *Idols* or *The Voice*. The demand for singing lessons, especially in order to learn how to belt, has risen significantly. Singers want to emulate famous singers who belt, such as Adam Lambert, John Legend, Beyoncé, Pink, Katy Perry, Christina Aguilera and Lady Gaga. Because so many adolescents want to adopt this style of singing, the challenge that faces a voice pedagogue or choral conductor is how to negotiate the transitional phase of the adolescent voice in a way that would ensure that the vocal instrument is kept healthy. Friar (1999, 28) believes that the voice pedagogue should guide adolescents on the basis of sufficient research on contemporary music in order to facilitate the transitional phase of their voices. Cooksey (1992), Smith-Vaughn et al. (2013), Miller (2009) and Stupple (2007) all acknowledge that careful and appropriate training of young voices can be beneficial. Miller (2000, 30) suggests that adolescents should avoid singing too high and for extended periods at a time. Voice pedagogues can play a big part by teaching adolescent singers to understand how the voice matures and to warn against tension or stressed singing (Cooksey 1992, 38).

**BEL CANTO**

The term *bel canto* designates a broad spectrum of vocal history, pedagogy, different techniques of voice production and vocal expression (Stark 2003, xvii). The origins of the *bel canto* style can be traced back to the traditions relating to the *castrati* (Robertson-Kirkland 2013, 9). Robertson-Kirkland (2013, 1) contends that one can distinguish different eras in the development of *bel canto*; (1) the *bel canto* which was defined by the rise of the *castrati* during the 17th and 18th centuries, followed by (2) the decline in the popularity of these singers, which resulted in the style being regarded as something of a myth. The (3) rebirth of the *bel canto* style was promoted by early 20th-century singers. It should also be mentioned that the first half of the 19th century was a very important time in the history of *bel canto* singing, especially in the works of composers such as Rossini, Bellini and Donizetti.
The characteristics of the *bel canto* style require specific technical skills from the singer. These characteristics include the specific use of breath during singing, *legato* and *coloratura* singing, the affective use of embellishments, an aesthetic use of controlled vibrato, a balance between bright and dark timbre, the unification of registers and the alignment and modification of vowels.

**Breathing process**

The aim of adopting a specific and effective breathing process for singing is to achieve efficient breath management which allows for tracheal air to be turned into tone (Miller 2004, 14). Stark (2003, 189) describes *bel canto* as an extraordinarily cultivated approach to singing, with an interaction between the “glottal source, the vocal tract and the respiratory system”. Glottal resistance, adjustments in especially the vertical position of the larynx, as well as the breath pressure, allow the singer “to vary the intensity and voice quality, and to sing with a seamless *legato* and without apparent register transition” (Stark 2003, 1).

Breathing for speaking is different from breathing for singing. The breathing process for singing includes the onset of tone, *appoggio*, breath control and breath support. Furthermore, singing requires a longer breathing phase with a higher rate of energy through breath control than ordinary speech does (Miller 2000, 36). Slowing down the exhalation phase relates to a technique known as *appoggio*. This technique involves a “complete system of structural support” (Miller 2004, 1), which includes the muscles for inhaling and exhaling. According to Davis (1998, 10), *diaphragmatic-intercostal breathing* is currently the breathing process that is regarded to be most conducive to effective singing. The muscles involved in this breathing process include the diaphragm, the muscles of the abdominal muscles and the thorax (Davis (1998, 10). Spoto (2016, 55) points out that “breathing for singing is a complex coordination” of these muscles. These are processes during which the prolonged balance is reinforced by the “external laryngeal frame-support system” (Miller 2004, 1), resulting in a free-hanging larynx.

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24 We use the term *breathing process* to describe the various actions involved when breathing for the purpose of singing, namely the role of the diaphragm during inhalation, as well as breath control and breath support (involving the use of the intercostal muscles and the abdominal muscles) during exhalation and phonation.
Legato and coloratura

As mentioned, bel canto performers strive to achieve an ideal tone. Miller (1996, 101, 103) claims that two features, namely legato and coloratura, are essential characteristics of the bel canto technique and constitute the basis of good singing. Sostenuto refers to legato (sustained notes) singing, while coloratura involves vocal agility and flexibility. Technically, legato singing requires accomplishing the onset and realisation of tone, while controlling the flow of breath (Miller 1996, 102). Furthermore, the singer can achieve effective legato lines by sustaining the sound on the vowels and by “avoiding the prolongation of consonants (keeping them crisply energized) and postponing the final vowel of a diphthong by giving primary attention to the first vowel (Ware 1998, 170). Portamento is closely related to legato singing. Stark (2003, 165) describes it as moving smoothly from one pitch to the other, while passing through the connecting notes of the interval at a slower rate than when singing legato.

Coloratura singing requires vocal agility and flexibility for the quick, melismatic phrases (Miller 2000, 56). Robertson-Kirkland (2013, 7) points out that the development of vocal flexibility is the key for developing a good vocal technique. Miller (2000, 56) is of the opinion that vocal agility can be achieved providing there is a “clean onset [of tone], release and quiet breath renewal”. He suggests that singing triadic vocal exercises legato, as well as staccato, while imagining abdominal sensations experienced during, for example, laughter and rapid breathing, should be beneficial in developing the technical skills needed for singing coloratura.

Vocal embellishments

Miller (2000, 56) believes that all singers should have the ability to use their voices freely in order to sing embellishments that require vocal agility and flexibility, such as glissandi, portamento and trills. Such embellishments are an integral part of the bel canto style. Elliott (2006) distinguishes between two groups of embellishments; the first of “graces”, which are the ornaments that decorate the melody with “trills, trillos, gruppi, esclamanzioni and messa di voce” (Elliott 2006, 21). Elliott (2006) describes each of these ornaments, as well as the difference between the trill and vibrato. The second group of ornaments entails segmentation
– separating larger notes into smaller, livelier values that alter the melody (Elliott 2006, 21). Duey (2013, 89) regards the messa di voce, an embellishment that requires the singer to increase and decrease the intensity levels of sound on a single note (Stark 2003, 244), as the most important embellishment. The purpose of embellishments is to contribute to the affective value of a performance (Stark 2003, 188). Elliott (2006, 21) believes that embellishments strengthen the words and intensify the expression. The execution of these embellishments requires vocal agility and flexibility. Miller (2000, 140) points out that, when singing a trill, the larynx intentionally oscillates with a raised pitch. This oscillation assumes that the larynx will be free-hanging. The messa di voce – also regarded as an ideal exercise – necessitates absolute control of phonation and optimal breath control (Miller 2004, 232).

**Vibrato**

Another aspect of singing that needs optimal breath control is vibrato. Since the early days of the Baroque era, the slight fluctuation in the pitch of the tone played an important role (Stark 2003, 150). Elliott (2006, 15) claims that “[v]ibrato is a natural part of healthy singing”. Sherman (2003, 66) asserts that it is essential for a bel canto singer to sing with vibrato. According to Miller (2004, 121), vibrato occurs when the vocal folds vibrate together with movement in the wall of the pharynx, epiglottis and the root of the tongue. He also describes it as the “periodic muscle relaxation during heavy-duty activity” (Miller 2004, 122). Toft (2013, 85) regards vibrato as a tool to help singers express their emotions, while Sell (2005, 117) believes that vibrato contributes to the understanding of the pitch, the strength of tone and the tone colour. As with all other aspects of singing, a controlled vibrato requires technical skill. Appropriate breath management and vocal expression are essential for the vibrato to be controlled and natural. Furthermore, it is important to maintain a balanced laryngeal position during vibrato (Miller 1996, 82; 12).

**Chiaroscuro**

One of the most important features of the bel canto style is the concept chiaroscuro. Stark (2003, 34) describes this quality of sound as a timbre with well-balanced components of both brightness and darkness of sound. This understanding of chiaroscuro is underscored by Miller
(1996, 10), who believes that the balance between the basic pitch and the proper vowel, as well as the energy of the acoustics lies in the area of singer’s formant (Miller 1996, 12). During the 18th and 19th centuries, this balanced timbre was regarded as the epitome of a beautiful sound (Stark 2003, 56).

The technical aspects of *chiaroscuro* relate strongly to the position of the larynx. The darkness of the sound (round and deep quality) is achieved by the shape of the resonance space between the mouth opening, the nose and the glottis (Stark 2003, 34). This space is achieved by lowering the larynx and elongating the vocal tract (Miller 1996, 82). When the larynx is elevated, the vocal tract is shortened (Miller 1996, 82) and a brightness of sound occurs as a result of the tight closure of the glottis that produces a “tone that is rich in frequency components” (Stark 2003, 34). Miller (1996, 12) also points out that it is important to keep the acoustic balance when the pitch rises by modifying the vowels.

**Register unification**

Another of the important features of the *bel canto* technique is register unification. Throughout history there have been different theories about the vocal registers, most notably the two- and the three-register theories. The two-register theory acknowledges the chest and the head registers, as distinguished by pitch and quality of the tone (Jahn 2013, 26). Ware (1997, 116) describes the three-register theory. He claims that when the chest qualities are combined with the head qualities, the result is a mixed register (Ware 1997, 116).

The transition from one register to another involves the *passaggio*: the position where two registers converge (Hoch 2014, 41). We distinguish between the *primo passaggio* and the *secondo passaggio*. The space between these two is known as the *zona di passaggio*. In singing, the *primo passaggio* needs more energy through the breath than in ordinary speech, while the vocal folds need to be elongated for those pitches that follow the *secondo passaggio* (Miller 2004, 29). Miller (1993, 161) describes the *zona di passaggio* as “the area of the voice where a number of tones can be sung by varying register emphases; middle voice”.

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Miller (2000, 120) points out four technical aspects relating to breath management that contribute to register unification, namely a stable and ultimately expanded ribcage, a diaphragm that is in a low position for an extended time, the delay of the exhalation rate and an elevated sternum.

Another aspect that relates to the *passaggio* is the laryngeal position. As early as 1840 Garcia introduced a theory to the *Académie des Sciences* that considered the position of the larynx in singing seriously (Stark 2003, 41). Stark (2003, 120) explains that the interaction between the breath pressure, the glottal resistance and the adjustments in the vocal tract enables the singer to change the intensity of the sound, as well as the quality of the voice while the transition between registers is negotiated unnoticed.

**Vowel formation**

Vowel formation is another feature of the *bel canto* technique that deserves consideration. Stark (2003, 153) believes that the prime function of the vocal art lies in the ability to move the listener’s heart through expressivity and soulful singing. The alliance of text and tone adds to musical expressivity (Stark 2003, 154). In singing, tone is carried by the vowels and in Western art music the singer is required to align and elongate the vowels when singing, while also pronouncing the consonants very clearly (Hass 2013, 372).

The form of the vocal tract is uniquely shaped to enable vowel construction. Therefore, each tone has its own quality that is accompanied by the frequency and the intensity of energy that is distributed. Furthermore, overtones – which are influenced by the vowel construction and space in the vocal tract – can also add “brilliance, shrillness, or thickness” to the sound (Reid 1950, 38). Hass (2013, 204) points out that vowels should be sung from the front of the mouth with the tongue and the jaw in a relaxed position. The clear articulation of language, as well as the retention of *chiaroscuro*, is only possible when there is a correlation between the shape of the vocal tract and vowel formation (Miller 2004, 66).

Robertson-Kirkland (2013, 4) suggests that singers use “long and complex exercises, similar in style to the exercises written for instrumentalists”. She also advises that these exercises should
be performed on either [a], [e] and [u], or by using the solfa (Robertson-Kirkland 2013, 4). These exercises should develop vocal flexibility, a skill that is essential for all singers, and enable singers to master aspects of vocal technique and their breathing process (Robertson-Kirkland 2013, 5).

**BELTING**

While some might think that belting is a new concept in vocal performance, Stark (2003, 75) points out that this technique can be compared with *sguaiato* (coarse tone) – a term that was used by Francesco Lamperti (1839–1910), a 19th-century Italian voice pedagogue. Various scholars attribute different characteristics to belting, so it is a challenge to find a truly comprehensive definition. Taking into consideration various scholars’ statements (Bonin 2012; Davies and Jahn 2004, 63; Gagné 2015, 1; Kayes 2014, 158; Popeil 2007, 77; Stark 2003, 85), one could describe belting as follows:

Belting is a powerful, bright and full-bodied way of singing that, to some extent, emulates ordinary speech. It requires a controlled technique that is characterised by an increase in subglottal pressure, which is the result of the longer duration of the vocal folds’ adduction,25 the elevated laryngeal position and the unique vowel formation. Furthermore, this technique is characterised by the chest register being pushed beyond the *passaggio* into the head voice. All these characteristics contribute to the specific timbre and style of belting.

Because of the integrated relationship between vocal CCM and the belting technique, the discussion that follows will offer some thoughts on the characteristics of CCM as a style of music that requires the performer to belt. Styles of CCM associated with belting include rhythm and blues (R&B), country music, rock music and jazz (Popeil 2007, 77). Cross-over artists, e.g. classically trained singers who perform non-classical repertoire, as well as artists who work in musical theatre have to master the belting technique. The discussion below considers the technical qualities required for singing CCM, specifically those involved with belting.

25Hass (2013, 390) points out that “the vocal folds are short, vibrating on a thick edge, and closed for 60–70 percent of the cycle”.
Breathing process

Regardless of the vocal style or genre, breath support in singing requires muscular operation (Kayes 2014, 28). Hass (2013, 388–390), a CCM pedagogue who enjoys international acclaim, explains the breathing process, including the breath support and breath control needed for sustained singing. She asserts that breath support is not a rigid process, but that the nature of the singer’s breath support will be determined by the required pitch and vocal timbre (Hass 2013, 290). Furthermore, the breath support “allows us to hold back excessive air pressure from our vocal folds; it is a *sine qua non* of an easier vocal facility without excess vibrato or a breathy tone [and] encourages efficient vocal fold closure, which means production of a stronger, more focused, sustainable, and clean sound” (Hass 2013, 388). Breath support involves the use of the pelvic floor, the diaphragm, the intercostal muscles and the upper abdominal muscles (Gagné 2015, 15; Hass 2013, 390). These muscles require the appropriate strength and tension (Gagné 2015, 15), while also being flexible, dynamic and natural (Chandler 2014, 38).

The type of tone that is produced is determined by the amount of air taken in and how it is applied during exhalation (Hass 2013, 290). Kempfer (2014:27) explains that belting requires less intake of air than for classical singing and warns that excess in the breathing process for belting might be detrimental, because the tone that is produced will sound strained and the singer’s voice could potentially be harmed. Furthermore, as mentioned in the definition above, belting is characterised by an increase in subglottal pressure (Stark 2003, 85). The pressure rises upwards from the lungs, through the vocal tract, causing the singer to experience a sense of heightened subglottal pressure as she pushes the voice through the ascending line, while the notes become increasingly tighter (Gagné 2015, 1).

Laryngeal position

Jahn (2013, 395) asserts that the position of the larynx is fundamental to performing CCM. The laryngeal position relates to the length of the vocal tract, the adduction and abduction of the vocal folds, the negotiation of the breaks between the registers (*passaggio*) and the vocal resonance. We began our discussion on belting by considering the breathing process involved
for CCM. We also mentioned earlier that the breathing process that involves the pelvic floor, the diaphragm and the intercostal muscles (diaphragmatic-intercostal breathing) allows the larynx to hang freely and to move in various directions more easily.

Belting is characterised by a raised larynx, as well as increased muscle tension in the supraglottal area. The changes in the laryngeal position involve the length of the vocal tract. Furthermore, the constriction and retraction of the vocal folds are influenced by the position of the larynx. A raised larynx results in the contraction of the vocal tract (shortening it). This increase in muscle activity in the larynx results in the extended adduction of the vocal folds which, in turn, causes an increase in the subglottal pressure. However, it is not only the raised larynx that plays a role in CCM. Kayes (2014, 25) explains that the vocal tone quality required for CCM can be achieved by tilting the thyroid forward, thus adjusting the length of the vocal folds. Negotiating the primo passaggio in belting is also made easier when the thyroid is tilted forward (Kayes 2014, 25). Ultimately, the laryngeal position and the subglottal pressure influences the supra-laryngeal spaces, which plays a role in the vocal resonance. The effective use of the supra-laryngeal spaces could be beneficial for the CCM performer because it helps to relax possible tensions around the vocal tract, thus ensuring a healthier voice (Gagné 2015, 61). The changes in the supra-laryngeal spaces also contribute to vowel formation.

**Vowel formation**

The shapes of the supra-laryngeal spaces have an effect on the shaping of the vowels, as well as on the balance of the overtones, both of which contribute to a variety of tone qualities. By combining intensity of sound (volume) with specific vowel shapes, the CCM performer can create a very powerful sound (Gagné 2015, 29). It is not only the shapes of the supra-laryngeal spaces that affect the vowel formation. The role that the effective use of the supra-laryngeal spaces plays in relaxing the tightness in the vocal tract also makes it possible for the singer to modify the vowels. This relaxation becomes even more important in the higher registers, where the increase in pressure requires appropriate vowel modification.

Vowel formation in belting has unique qualities. The vowels emulate the natural speech of American and English vowels (Presti 2013, 372) and are shorter, straighter and brighter than
the Italian vowels used in Western art music (Jahn 2013, 373). However, it is not only the unique use of vowels that characterises belting. The consonants are articulated less than in Western art music, resulting in the pronunciation and enunciation being less distinct (Hass 2013, 372).

**Registers**

The importance of the laryngeal position in belting was mentioned earlier. Another aspect that gives belting its unique character is the use of registers. Stark (2003, 85) explains that, when belting, the “chest voice is carried beyond the point where it would ordinarily switch register”. McCoy (2007, 548) observed singers who belt and found that their voices were light in the lower register and displayed increased energy as they ascend to the middle voice (which resembles a speech-like sound), eventually sounding bright and open in the high register. The timbre stayed even throughout with seamless transitions between the registers. This register unification also implies the use of voix mixte (mixing the registers). The mixed voice includes a great variety of vocal tones and indicates the combination of the muscles used for singing in the chest and in the head register (Gagné 2015, 42). Therefore, the singer has to develop these muscles in order to ensure strength, flexibility, coordination and longevity (Edwin 2007, 215).

The singer who belts also has to keep the body and the vocal tract pliable by avoiding compressing the vocal folds excessively, especially in the higher register (Popeil 2007, 78) and by eliminating any tension that might lead to “clenched jaws, wobbling tongues, tight neck muscles [and] heaving chests” (McCoy 2007, 548).

**Vibrato**

Another important aspect in belting concerns the use of vibrato. The use of vibrato influences the timbre of the sound by adding nuances and vibrancy to it. Vibrato also adds to the affective value of the performance and to the characteristics of specific CCM styles. Different styles of vocal CCM can be linked to the speed and width with which the vibrato is executed (Soto-Morettini 2014, 100). It is possible for a singer to achieve greater stylistic variety by managing the speed of the vibrato. Scholars such as Soto-Morettini (2014, 100) and Presti (2013, 373)
explain that rock music is characterised by a faster vibrato rate, while musical theatre performers often apply a slower vibrato rate. Jazz singers use vibrato for special effect at the end of phrases. Gospel singers measure vibrato in triplets, while the vibrato is less measured in folk singing. In some cases singers choose to use no vibrato (also known as straight-tone singing) as a special effect. Keidar (2013:372) regards the skill of straight-tone singing as an integral part of performing CCM in a way that is perceived to be authentic.

Managing the vibrato, an important skill for any singer, requires controlling the breath support, as well as reducing excess tension in the laryngeal muscles and the tongue. Managing the breath support, using the muscles mentioned earlier, will assist in controlling the vibrato. Should the singer apply too much breath support while singing in the lower register, for example, the vibrato will be excessive. The control of the vibrato is also facilitated by avoiding tension in the laryngeal muscles and in the tongue. Keidar (2013, 360) points out that tension in the laryngeal muscles can result in “a slowing of the vibrato rate, widening of the vibrato extent (wobble), and unsteady vibrato”. Tension in the tongue impairs not only the controlled vibrato, but also the performance of the higher register (Keidar 2013, 2360).

**Vocal embellishments**

The CCM performer also has to master the art of vocal embellishments while belting. Embellishments of the melodic line and improvisation contribute to the affective value of the performance. Miller (2000, 56) asserts that all singers should have the necessary vocal flexibility and agility to perform rapid melismata and other embellishments. Embellishments in CCM include runs (ascending and descending scale passages), licks and riffs (Chandler 2014, 43). The runs are commonly based on the pentatonic major and minor scales, as well as on the hexatonic scale (Chandler 2014, 43). The *coloratura* passages in Western art music, which are often based on scales and sequential patterns, can be compared with riffs in CCM. What is known as *cadenzas* in Western art music could be regarded as similar to licks in CCM. With riffs and licks the singer improvises, using vocal flexibility and agility to create special effects and enhance the affective value of the performance.
SIMILARITIES AND DIFFERENCES BETWEEN BEL CANTO AND BELTING

The statement was made above that many adolescent singers, whose voices are especially vulnerable during the transitional phase, are eager to perform music that requires them to belt. However, there are some scholars, some of them esteemed pedagogues in CCM, who caution against the irresponsible use of this technique. Gagné (2015, 7) points out that belting is usually taught to more advanced voice students, because of the fear of possible damage. While acknowledging that belting is exhilarating, Hass (2013, 402) warns that it should be used with care. Thurman and Klitzke (1994, 241–243) refer to clinical information that underscores their understanding that there are other voice professionals, teachers and educators who believe that belting can potentially harm a young voice, particularly that of an adolescent singer. Davies and Jahn (2004, 63) warn that excessive and inappropriate belting might cause physical reddening and swelling of the vocal folds and could result in physical trauma such as nodules and polyps.

However, it should be said that it is not only belting that might lead to vocal damage. Any style of singing that is practised without care and with poor technique holds the risk of damaging the voice. Nevertheless, there are scholars who believe that, with the proper training, it is possible to guide the adolescent voice through the transitional phase. Popeil (2007, 78) explains that it is possible to facilitate the production of a speech-like sound that can move with comfort into the upper vocal range in both male and female voices.

Having explored the characteristics of the bel canto technique and belting used in CCM, it is possible to draw some conclusions regarding the similarities and differences between these two concepts. The fact that the physiology of the vocal instrument is the same for all styles and genres does not need to be argued. Nor does it have to be established that an effective breathing process contributes to an ideal sound. The muscles involved in the breathing processes and the physiology of the vocal tract are the same for bel canto and for belting. The difference lies in the operative functioning, coordination and balance of the diaphragm, the intercostal muscles and the abdominal muscles, especially during exhalation, as well as in the shape and length of the vocal tract to produce a specific quality of sound, a sound that is characteristic of the specific style of singing. In bel canto the rate of exhaling is somewhat delayed, resulting in a
sound that is sustained and supported throughout. In belting the breath support determines the variation in desired tone quality and timbre.

Ultimately the breath support in belting is different from the support used for *bel canto*. The breath support in *bel canto* aims to allow the singer to maintain the space, low air pressure and lack of unnecessary tension and resistance in the vocal tract that is achieved during inhalation (low, diaphragmatic breathing). In belting the breath support enables the singer to adjust the vocal tract and achieve an increase in sub-glottal pressure, which is the result of the vocal folds adducting for a longer time than when the air is allowed to flow through them with the least resistance.

The breath support also plays a role in the laryngeal position. While the general understanding is that the larynx would ideally be free-hanging for *bel canto*, one should take note that, even when performing this style, the larynx does move in various directions from its neutral position, namely up and down, as well as tilting backwards and forwards. In both *bel canto* and in belting the vocal folds are activated to sing higher notes when the thyroid cartilage is tilted forward, while the forward tilt of the cricoid cartilages shortens the vocal folds (Kayes 2004, 23). Every time the laryngeal position is altered, the vocal tract either shortens or lengthens, resulting in the vocal resonance and the sound quality changing.

The difference of the laryngeal position between *bel canto* and belting is that artists and pedagogues who practise *bel canto* prefer a lower larynx, while the laryngeal position most conducive to belting is neutral (as in speech) or slightly raised. At times the raised larynx in belting might be accompanied by increased muscle tension in the supraglottal area and singers sometimes intentionally lower the larynx to avoid spasms in the external muscles of the larynx. Another difference between *bel canto* and belting is that in *bel canto* the retraction of the vocal folds creates a feeling of space inside the larynx and this extended capacity allows for less air pressure and the vocal folds to vibrate freely. In belting the power with which the notes are sung, especially in the higher register, results in the vocal folds adducting for a longer time, thus increasing the sub-glottal air pressure.
One of the most significant differences between bel canto and belting, apart from the laryngeal position, is the vowel formation. In both styles the correlation between text and tone contributes to the expressivity of the performance. In both bel canto and belting the shape of the vowel formation determines the shape of the vocal tract, which affects the balance of overtones and therefore informs the quality of the tone. The difference is that, in bel canto the result of the correlation between the vowel formation and the vocal tract results in the desired chiaroscuro, while in belting the correlation leads to the unique broad and twangy sound. In bel canto singers are expected to produce pure vowels – the Italian [i], [e], [a], [o] and [u] – in the front of the mouth, with the mass of the tongue forward and the jaw relaxed. They are also required to align the vowels. The vowels are to be elongated and the consonants clearly articulated. In belting the vowels are shorter and the consonants are articulated less. In belting the vowels are based on a more natural, speech-like model and emulate the pronunciation of American and English vowels. The vowels are shorter, sounding broader and more open, while the consonants are articulated less than in bel canto. In bel canto, as well as in belting, the modification of vowels is applied to facilitate the desired tone quality. In bel canto the vowel modification is used, for example, to assist with register unification.

The concepts of register unification, passaggio and mixt voix are recognised in both bel canto and belting. While bel canto requires a seamless unification of chest, middle and head register through the negotiation of the primo and secondo passagi, belting is characterised by the chest register being pushed beyond the passaggio into the head register, with the chest register muscles contracting continuously. However, this transition from chest to head register should also happen with as little noticeable effort as possible.

In bel canto as well as in belting the use of vibrato is applied to add affective value to the performance. Both styles regard control of the vibrato as important and use the breath support to manage the vibrato. The difference between the use of vibrato in bel canto and belting is stylistic. Bel canto requires a consistent, controlled vibrato throughout the full range of the voice and throughout the musical phrases. The low air pressure, free-hanging larynx and the extended vocal tract, combined with controlled breath support, allow for consistency in the vibrato. In belting the vibrato rate fluctuates according to the different genres. The changes in the laryngeal position and the consequent fluctuation in air pressure result in the possibility of varying the
vibrato rate. Furthermore, belting also applies straight-tone singing – a practice which is not looked upon favourably by bel canto practitioners.

Vocal embellishments are synonymous with bel canto and therefore the singer is required to have great vocal flexibility and agility. In some CCM genres vocal embellishments are also part of the repertoire’s traits, often manifesting as improvised runs, licks and riffs. As is the case with performers of bel canto repertoire, singers who belt also need to work on the flexibility and agility of their voices.

CONCLUSION

This article set out to determine how bel canto techniques can be used to develop healthy vocal techniques in adolescent singers who belt. The discussion on the adolescent voice indicates that it is vulnerable and needs to be treated with considerable care. We also took note that there is an increasing desire amongst adolescents to perform CCM, which requires the singer to be able to belt. However, because of the cautionary statements by esteemed scholars about belting and the vulnerability of the adolescent voice, it is necessary to understand how the voice pedagogue can facilitate the development of the adolescent’s voice in as healthy a way as possible.

While acknowledging that all styles of singing might potentially harm the voice if one does not take care, we argue that, in the bel canto technique, the coordination of the muscles involved in the breathing process, along with the resulting processes of prolonged and opposing balance in the external muscles of the larynx, holds many benefits for the singer. It allows for the breath flow to move through the vocal tract with the least resistance (low pressure) and for the larynx to be able to move freely. It is a technique that can feel natural and comfortable. While also recognising the clear differences between bel canto and belting, we do believe that, by introducing the adolescent singer to the bel canto technique at the outset of voice training, the voice pedagogue could safely negotiate the singer’s vocal development in a healthy way. Once singers know how it feels to sing in a supported, but natural and comfortable manner, they will also be able to recognise any instances of unnatural tension in the body when singing.
The discussion of all aspects of bel canto and belting showed that the breathing processes of both styles are extremely important. Therefore, learning to master a breathing process that would allow the adolescent singer to phonate in a natural and comfortable manner would be a good place to start with the vocal training. The processes involved in diaphragmatic-intercostal breathing (diaphragmatic inhalation, exhaling while supporting and managing the breath flow with the intercostal and abdominal muscles) will allow the still developing adolescent larynx to function with as little stress as possible. Once the singer has mastered the breathing process and understands how it contributes to the sensation of a natural and comfortable sound production, the voice pedagogue can proceed to explain how to alter the vocal tract by raising the larynx and how to achieve the increase in air pressure, both which are required for successful belting.

The breathing process relates not only to the free-hanging larynx, but also to the vibrato, the flexibility and agility of the voice, and to the register unification. The free-hanging larynx, which is achieved by means of diaphragmatic-intercostal breathing, allows the vocal folds to vibrate freely, while the breath support ensures a controlled vibrato. Regardless of whether one performs bel canto or CCM, vocal embellishments are performed most effectively when based on the coordinated muscle functioning for breath support and management of breath flow. The register unification in bel canto requires the singer to negotiate the primo and secondo passagi seamlessly. This is done through managing breath support by very subtly altering the vocal tract and also by modifying the vowels somewhat as one moves into the higher register. The adolescent singer should experience the sensation of controlled and natural vibrato, of performing embellishments using appropriate breath support and breath flow, and of unifying the registers in a natural and comfortable manner. Only then should the singer attempt to alter the vibrato rate and to push the chest register higher into the head register and only then will he or she be able to recognise if the increase in sub-glottal air pressure and the raised larynx are applied to the extent of being uncomfortable and potentially harmful.

It is not only mastering the diaphragmatic-intercostal breathing process that can benefit the adolescent singer who wants to belt. When used correctly, the Italian tongue vowels [i], [e] and [a], as well as the lip vowels [o] and [u], used in bel canto place the tongue in the ideal position for the singer to achieve a bright and forward quality of tone. The bel canto singer is also taught
to align the vowels and to modify them, especially when singing in the higher register. Once
the adolescent singer is familiar with the technique required to align and modify the vowels as
for bel canto, it would not be too difficult to further adjust (modify) the vowels to produce even
brighter and more open-sounding vowels that emulate an American pronunciation for belting.

The voice pedagogue would quite likely not succeed in suggesting only Western art music
repertoire to the adolescent singer who wants to actually perform CCM in order to buy time
until the instrument is fully developed. Therefore, we suggest that the repertoire for these young
singers be chosen with the greatest of care. During the early stages of voice training, the CCM
repertoire should be conducive to creating teaching-learning experiences that would develop
the management of breath support and breath flow, as well as a natural and controlled vibrato,
the seamless unification of registers, and clearly articulated vowels and consonants. The
tessitura of the selected repertoire should ideally be largely within the middle range of the
voice, with occasional instances where the voice moves comfortably into the higher or lower
registers. The singers should refrain from singing in the high register for an extended time as
this might put too much strain on their instruments.

In conclusion, we deem it safe to say that it is not necessary to withhold proper voice training
for adolescents who want to belt. We do argue, however, that such training should be done with
the necessary care, avoiding any activities that might place unnecessary strain on the larynx
that has not yet developed fully. We believe that guiding the adolescent singer to sing in a way
that feels natural and comfortable, as is promoted by the bel canto technique, will not only
make the teaching-learning process less stressful and more enjoyable, but will also lessen the
possibility of the singer’s voice being harmed before moving on to the more strenuous activities
involved in belting. While admitting that mastering the breathing technique and other aspects
of bel canto might take some time, we believe that carefully nurturing the vulnerable adolescent
voice will be time well spent. Talent does not go away, but not heeding the pitfalls that specific
technical aspects can hold for a vulnerable adolescent voice could hinder the development of
such talent. We trust that this article has at least been thought-provoking and lead to voice
pedagogues and young adolescent singers seeking only the best methods for their teaching-
learning experiences.
REFERENCES


CHAPTER 6: CONCLUSION

In Chapter one I stated that the purpose of this study would be to develop an understanding of how bel canto techniques can be used to develop healthy vocal techniques in adolescent singers who belt. In order to achieve this purpose, I had to answer not only the main question – namely: How can bel canto techniques be used to develop healthy vocal techniques in adolescent singers who belt? – but also three sub-questions:

- What are the characteristics of adolescent voice?
- How can the qualities of bel canto and belting techniques be described?
- What are the differences and similarities between bel canto and belting?

A review of the literature on the adolescent voice in Chapter Two strengthened my belief that the adolescent voice going through the transitional phase is vulnerable and should be handled with the utmost care. Chapter Two also reviewed literature on the bel canto style and techniques. It showed that bel Canto is a term that describes a style of voice production that evolved over many centuries through the integration of different techniques and vocal expressions. The coding and categorizing of the data collected during the literature review indicated that the breathing process (diaphragmatic-intercostal breathing), which includes the management of breath support and breath flow, is the absolute foundation upon which the bel canto technique rests. The interaction between the breathing process, the vocal tract and the glottal source facilitates not only the ideal shape of the vocal tract and laryngeal position when performing Western art music, but also allows for a controlled vibrato, long and sustained legato lines, and the successful execution of vocal embellishments, including coloratura passages. Along with vowel formation and modification, the breathing process also assists with register unification, resulting in a beautifully even timbre throughout the registers. Ultimately, the bel canto technique allows the singer to sing in sustained way for an extended period of time.
While researching the belting style and technique (presented in Chapter Three), I was able to make some inferences that helped me formulate a brief definition of the technique.

Belting is a powerful, bright and full-bodied way of singing that, to some extent, emulates ordinary speech. It requires a controlled technique that is characterised by an increase in subglottal pressure which is the result of the longer duration of the vocal folds’ adduction, the elevated laryngeal position and the unique vowel formation. Furthermore, this technique is characterised by the chest register being pushed beyond the passaggio into the head voice. All these characteristics contribute to the specific timbre and style of belting.

As is the case with bel canto, the breathing process involved with belting plays a significant role in how effectively this technique is applied during a performance. The management of breath support and breath flow plays a huge role in the shape of the vocal tract, the increase of subglottal air pressure and the laryngeal position. This contributes to the movement of the chest register beyond the normal break in the voice into the head register. As in bel canto, the successful execution of vocal embellishments depends on how well the musical lines are supported by the breath. The breathing process also informs the vibrato rate which can fluctuate considerably in CCM, depending on which genre is being performed. The specific use of vibrato is not the only unique feature of vocal genres that requires the belting technique. The unique vowel formation allows the vowels, which emulate the American pronunciation, to be brighter and more open than the Italian (pure) vowels.

As the discussions on the bel canto and belting progressed, it became clear that one could draw some comparisons between the two singing styles. The most obvious similarity is the mechanism used to phonate; the muscles involved in the breathing processes, the vocal tract, the supra-laryngeal spaces and the articulators. The differences between bel canto and belting involve the way in which the mechanism functions. The breathing process in belting allows for higher subglottal air pressure than is the case in bel canto. The laryngeal position for bel canto is generally lower
than in belting, where the higher laryngeal position contributes to the extended closure of the vocal folds, which in turn results in the increase of subglottal air pressure. The register unification in bel canto, which requires a seamless transition from one register to the other while maintaining an even timbre, gives way to the chest register being pushed up into the head register in belting. The use of vibrato in bel canto is less varied than in belting, where the vibrato rate is determined by the genre which is performed. Vocal embellishments in both cases are dependent on the artists’ vocal flexibility and agility, which require effective management of breath support and breath flow.

Having considered all the features of bel canto and belting, as well as what emerged from comparing them, it is possible to make some suggestions on how bel canto techniques can be used to develop healthy vocal techniques in adolescents who belt. In the first place it is important to state that the role of the teacher is extremely important in order to teach young singers how to use their instrument correctly. Teachers should have knowledge about healthy singing techniques in order to guide adolescents through the transitional phase, learning how to use their bodies, breath and tone in a way that will ensure a long, healthy career.

Introducing the young adolescent singer to some of the bel canto techniques at the outset of their vocal training might be beneficial for maintaining their vocal health while the still under-developed larynx has time to grow into its own. Once the young singer has a solid understanding of how the vocal mechanism works and feels in a relatively natural and comfortable performance, it becomes easier to recognise any untoward and harmful tension in the vocal mechanisms. I would suggest that the adolescent singer begins by mastering diaphragmatic-intercostal breathing, a controlled vibrato and the free-hanging larynx. Furthermore, the adolescent singer could work on the seamless register unification characteristic of bel canto, as well as the vowel formation that allows for a sound that is forward and bright. Once singers are totally familiar with the theories and sensations associated with these singing styles, they can begin to venture into raising the larynx and closing the vocal folds for a longer time, using the resulting increase in the subglottal air pressure, modify the vowels to achieve a twangier sound and using the controlled breath support to adjust the vibrato rate.
Consequently, the adolescent singer can gradually develop the belting technique while maintaining good vocal health.

Before commencing this research study, I was sceptical about belting. I have since come to realise that my scepticism was largely because I was unfamiliar with the concept and practice, as well as having perceptions based on media information about many singers with vocal injuries. Based on this research study, I have discovered that with a good technique and healthy habits, belting can be taught to advanced students, as well as to adolescents, providing that the necessary care is taken to ensure vocal health.

Besides the above-mentioned insight into the topic at hand, this research study also made me realise that the following topics might be worthy of further research:

- Suitable exercises for vocal warm-up and development for adolescents who belt;
- Appropriate musical theatre repertoire for adolescent voices;
- Appropriate contemporary commercial music ballads for adolescent voices;
- Lived experiences of adolescents who participate in contemporary commercial music competitions.
REFERENCE LIST


ADDENDUM A: INSTRUCTIONS FOR AUTHORS

Muziki: Journal of Music Research in Africa

Thank you for choosing to submit your paper to us. These instructions will ensure we have everything required so your paper can move through peer review, production and publication smoothly. Please take the time to read and follow them as closely as possible, as doing so will ensure your paper matches the journal's requirements. For general guidance on the publication process at Taylor & Francis please visit our Author Services website.

Author Services

SCHOLARONE MANUSCRIPTS

This journal uses ScholarOne Manuscripts (previously Manuscript Central) to peer review manuscript submissions. Please read the guide for ScholarOne authors before making a submission. Complete guidelines for preparing and submitting your manuscript to this journal are provided below.

Style Guide: Chicago Manual of Style, Author-Date

Unisa Press uses the Chicago Manual of Style (http://www.chicagomanualofstyle.org/).

The style guide focuses on two major aspects: 1) Guidelines for technical preparation; 2) Citation guidelines.

1. Guidelines for Technical Preparation of Manuscript

Layout

General

Submit manuscripts electronically as Microsoft Word files.

All graphic material has to be positioned at the correct place in the text and should be of a good quality. Do not add supplementary files with graphic content.
Manuscripts must be presented as: A4 pages; normal margins; 12pt Times Roman; 1.5 line spacing.

Add a line break (enter key) between all paragraphs. Do not apply paragraph styles (hanging indents, automatic spacing after or before, etc.).

Proofing language must be set as UK English (colour—not color; travelled—not traveled; organise; organisation; organising—not -ize).

Do not type double spaces anywhere; not between words, at the end of sentences or after colons.

Type hard spaces (shift + control + space bar) when phrases are preferred to be presented as a unit, e.g.10_000; Vol. 1 (2):_22–21.

Articles should be between 5 000 and 8 000 words in length (from the first word of the title to the last word of the references).

Make sure you follow the guidelines for ensuring a blind peer review.

Present an abstract of not more than 250 words. Abstracts should not contain any footnotes or citations. Do not type the abstract in italics.

Below the abstract, please provide 5–8 keywords for indexing (only proper nouns should be capitalised). Distinguish between keywords/phrases with a semicolon, e.g. Pentecostal; hymnal records; migration; southern regions of Africa.

Authors should include their affiliation or ORCID below their name, after the title of the article.

**Book reviews**

Please note the format and order of information required:
*Oxford Dictionary of Journalism*<br>
Tony Harcup<br>
Oxford University Press. 2014. Oxford Quick Reference. xiv + pp. 368.<br>
ISBN: 978-0-000000-1 <br>
https://doi.org/nwulib.nwu.ac.za/10.1093/acref/9780199646241.001.0001 <br>
Reviewed by Rod Amner<br>
orcid.org/0000-0000-0000-0000 <br>
Rhodes University, School of Journalism and Media Studies, South Africa<br>
r.amner@ru.ac.za <br>

**Style**<br>
Do not use the ampersand (&) anywhere in the text or citations; use “and” instead.<br>

In text, emphasise words by using italics only sparingly. Italicisation should otherwise be reserved for titles and words from a language other than that of the text.<br>

Italicised words/phrases in another language are glossed by an equivalent word/phrase in the language of the text in single inverted commas placed in parentheses, e.g. *indoda* (“a man”). Words well-known in South African English are set as roman, for example, “lobola,” “ubuntu,” “indaba.”<br>

Words/terms that need to be singled out as being “borrowed” from another author/source may be placed in double inverted commas.<br>

Titles of *standalone publications* must be in headline style (significant words are capitalised) and in italics when typed in the text. Titles of articles are placed between “double inverted commas.” Also see citation guidelines for examples.
Acknowledgements

Acknowledgements appear at the end of the article, should be brief, and recognise sources of financial and logistical support and permission to reproduce materials from other sources. Save a copy of documentation granting such permission. Adherence to copyright rules remains each author’s sole responsibility.

Footnotes

Footnotes with references in Arabic numbers (1, 2, 3—do not use i, ii, iii) are allowed on condition that these are limited to essential notes that enhance the content without impeding the fluent reading of the article.

Footnotes are typed in 10pt. font and single spacing; hanging indent.

A note number should generally be placed at the end of a sentence or at the end of a clause. The number normally follows a quotation. Relative to other punctuation, the number follows any punctuation mark except for the dash, which it precedes. Examples are:

"This," wrote George Templeton Strong, "is what our tailors can do." 1

The bias was apparent in the Shotwell series 2—and it must be remembered that Shotwell was a student of Robinson’s.

Though a note number normally follows a closing parenthesis, it may on rare occasion be more appropriate to place the number inside the closing parenthesis—if, for example, the note applies to a specific term within the parenthesis:

(In an earlier book he had said quite the opposite) 3

Men and their unions, as they entered industrial work, negotiated two things: young women would be laid off once they married (the commonly acknowledged “marriage bar” 4), and men would be paid a “family wage.”
Endnotes are not allowed.

Footnotes do not replace the alphabetical list of references at the end of the text. References in notes are regarded as text references and not bibliographic information.

Quotations

When quoting from a source, use “double inverted commas”.

To quote within a quote, use ‘single inverted commas’.

When quoting more than five lines, indent. Do not print indented text in italics and do not use quotation marks. A citation after the indented quote follows after a full stop, e.g. According to the report the council will discuss the matter at the next council meeting to be held on 5 January 2017. (Smit 2002, 1)

When quoting within an indented quotation, use double inverted commas.

Final full stops and commas are placed inside the quotation mark.

Colons and semicolons are placed outside of quotation marks.

Question and exclamation marks are only placed inside quotation marks if they form part of the quoted material:

Do you know if she is “accredited”?

He asked: “Are you accredited?”

When adding notes to a quote or changing a quotation, use square brackets, e.g. [own translation/emphasis]/[t]oday.

Numbers

In text, numbers one to nine are in words; numbers 10 and above are in digits. At the start of a sentence all numbers are in words.
In parentheses, all numbers are in digits; as for numbers of tables, figures and chapters.

When in text, percentages (below 10) are in words—seven per cent; above 10 are digits—22 per cent/13.5 per cent.

Decimals—e.g. 7.5 per cent—are always in digits (also in text).

Use the % sign in parentheses and per cent in text.

Chicago prefers 122nd and 123rd (with an n and an r) over 122d and 123d. The letters in ordinal numbers should not appear as superscripts (e.g., 122nd and NOT 122 nd ).

Examples:
Gwen stole second base in the top half of the first innings.
The restaurant on the forty-fifth floor has a splendid view of the city.
She found herself in 125th position out of 360.

Equations
Use Math type for display and inline equations, but not for single variables. Single variables should be inserted into the text as Unicode characters.

Abbreviations
Abbreviations that begin and end on the same letter as the word, do not get a full stop (Mr/Dr/Eds), but note Ed./Rev.

Degrees: (Preferably without any punctuation)
BA; DPhil; MSc

Ellipsis
Use the ellipsis when indicating that text has been left out in the middle of a quoted sentence—preferably not at the start or end of the sentence. It is a given that text has been left out preceding and following your quote.
Insert spaces before and after the ellipse.

Use only three full stops for an ellipse (A full stop is added before an ellipsis to indicate the omission of the end of a sentence, unless the sentence is deliberately incomplete. Similarly, a full stop at the end of a sentence in the original is retained before an ellipsis indicating the omission of material immediately following the full stop.)

E.g.
In May 1862, two new missionaries, Endeman and Albert Nachtigal, joined Grützner and Merensky. … It was decided that Endeman and Grützner continue working. … The latter two eventually established the mission station Botshabelo … which later would play an important role in the Ba-Kopa history.

Dashes
The unspaced em-dash (—) is used (Alt 0151).

An unspaced en-dash (–) (Alt 0150), NOT A HYPHEN (-), is used to indicate ranges (e.g. of numbers or page numbers: 15–21).

Initials:
One initial: Steyn, P. 2009.
Multiple initials

Steyn, P. R. G. 2009. (spaces between initials)

Capitalisation of personal names
Names and initials of persons, real or fictitious, are capitalised. The reference lists in some journals (especially in the natural sciences) always use initials instead of given names. A space should be used between any initials.
Examples are:
Jane Doe
George, S. McGovern
P. D. James
M. F. K. Fisher

**Acronyms**

Give the full name when first mentioned (with acronym in parentheses), thereafter use the acronym uniformly and consistently:

Unisa; CSIR; HSRC; Sabinet/SABINET

*et al.*

*et al.* (not italics) Never use in the reference list.

When citing a text with four+ authors, use only the first author’s name followed by “et al.” in text, but list all authors in the reference list.

**Tables and figures**

Table headings appear above the tables and are numbered.

E.g. Table 1: Our Table

Figure captions appear below the figures and are numbered.

Captions of figures other than artworks should be short and descriptive.

Include cited authors in the reference list.

Supply the source below the table or figure, if material is copyrighted.

Captions of artworks should include, in the following order:

Figure 1 Artist, title (date). Medium/support, metric dimensions. Name of collection, city of collection, other collection information such as “gift of …”, accession number (copyright or credit-line information in parentheses).

Credit lines of artworks should include all elements specified in the letter of permission from the rights holder, institution and/or photographer.

Examples:

Figure 1: Sandro Botticelli, Primavera (ca. 1482). Tempera on panel, 203 x 315 cm.

Galleria degli Uffizi, Florence (photograph provided by Scala / Art Resource, New
Figure 2: Roman sarcophagus, Death of Meleager (3rd century CE). Detail. Musée du Louvre, Paris (photograph © James Smith, Rome).


If a scan is used from e.g. a catalogue, this must be indicated by means of an exact reference: Figure 4: Pieter Brueghel the Elder, The Misanthrope (1568). Tempura on canvas, 86 x 85 cm. Signed and dated: ‘BRVEGEL 1568’. Museo e Gallerie Nazionali di Capodimonte, Naples, catalogue number 585 (reproduced from Martin 1978, figure 37).

Include cited authors in the reference list.

Supply the source below the table or figure, if material is copyrighted.

**Linguistic examples in series**

Series of linguistic examples have to be presented neatly (as borderless tables). Individual examples should only be numbered if they are discussed with reference to that number in the article’s body text. Such numbering should occur consecutively. The example numbers should be in parentheses and placed next to the left-hand margin.

Numbered examples may be contrasted or compared to one another by using alphabetical numbering for purposes of contrast and comparison.

If numerous examples are necessary to substantiate a specific point, an appendix may appear at the end of the article.

For the presentation of interlinear glosses, please refer to the Leipzig Glossing Rules (https://www.eva.mpg.de/lingua/resources/glossing-rules.php)
2. Citation Guidelines: Chicago Author-Date

In text:
Within the body of your text, citations are indicated in parentheses with the author's surname, publication date, and page number (if needed, as when quoting direct words), e.g. (Smith 2012, 45).

Citations are placed within the text where they offer the least resistance to the flow of thought, frequently just before a mark of punctuation.

Single-author citations: If the author’s name appears in the text it is not necessary to repeat it, but the date should follow immediately:
Malan (2014, 4) refers to this …

Single author with two or more works in the same year:
(Gray 2009a; 2009b)

One publication with two or three authors:
… contested by Smith and Jones (2013, 16). Also (Smith and Jones 2013, 16)

Multiple publications:
… venture failed (Bergin 2009; Chance 2008, 14–17).

When citing multiple publications/authors do so alphabetically (Louw 2010a, 3; Ncube 2008, 77; Zeiss 1993, 4).

Multiple-author (three+ authors) publications with the same initial surname and same year of publication—shorten titles:
(Coe et al., “Media diversity,” 2001) and (Coe et al., “Social media,” 2001)

No page numbers are needed if citing a text on the Internet, e.g. academic freedom
(Smith 2014), unless page numbers are available:

When citing a secondary source:
… greater good (Mullins as quoted in Khan 2014, 6).
Mullins (as quoted in Khan 2014, 6) argues …

Blogs are only referenced in-text.

References: (See examples below)
Use the heading: References.

Only list sources actually referred to in the text.

Authors
List authors alphabetically. Use surnames, first names (if known) and initials.

NB: Although full first names are used in the examples in this document, it is also acceptable to use authors’ initials only, as long as one system is used consistently in a given article.

The entries are additionally sorted by the work’s date of publication (oldest to newest).

Do not use a dash to replace author names.

If no author or editor, order alphabetically by title (corresponding with text citation).

A single-author entry precedes a multi-author entry beginning with the same surname.

Successive entries by two+ authors, where the first author is the same, are alphabetised by co-authors’ surnames.
Titles
Use headline-style capitalisation in titles and subtitles of works and parts of works such as articles or chapters (i.e., *Biology in the Modern World: Science for Life in South Africa*). Capitalise significant words and proper nouns.

Use headline-style capitalisation for titles of journals and periodicals (i.e., *Journal of Social Activism*).

Titles of stand-alone publications are typed in italics when used in text: *Evangelism and the Growth of Pentecostalism in Africa*.

Compound sources

Treat pamphlets, reports, brochures and freestanding publications (such as exhibition catalogues) as books. Give sufficient information to identify the document.

Electronic references (NB: The text reference must correspond with the alphabetical reference list)
Author’s surname, name and initials (if available); title of article/publication. website address (URL):

Personal communications, letters, conversations, emails, interviews, recordings may be listed separately in the reference list.

Omit: Inc., Co. Publishing Co. etc. from the name of the publisher.
**Journals**

Parentheses with issue number: When *volume and issue number* are used, the issue number is placed in parentheses.


When *only an issue number* is used, it is not enclosed in parentheses.


**Archival material/manuscript collections**

When citing archival material in the author-date style, it is unnecessary to use n.d. (no date) in place of the date. Dates of individual items should be mentioned in the text, when applicable:


(in text) Oglethorpe wrote to the trustees on January 13, 1733 (Egmont Manuscripts), to say ...

Alvin Johnson, in a memorandum prepared sometime in 1937 (Kallen Papers, file 36), observed that ...

If only one item from a collection has been mentioned in the text, however, the entry may begin with the writer’s name (if known). In such a case, the use of n.d. may become appropriate:


(Dinkel, n.d.)
Examples (For full list of examples see http://www.chicagomanualofstyle.org/tools_citationguide/citation-guide-2.html)

R: Reference list
T: Text citation

Books

One author
T: (Pollan 2006, 99–100).

Two or three authors
T: (Ward and Burns 2007, 52).

Four or more authors, list all of the authors in the reference list; in the text, list only the first author, followed by et al. (“and others”):
T: (Barnes et al. 2010).

Editor, translator, or compiler instead of author
T: (Lattimore 1951, 91–92).

Editor, translator, or compiler in addition to author
T: (García Márquez 1988, 242–55).

Chapter or other part of a book
T: (Kelly 2010, 77).

**Chapter of an edited volume** originally published elsewhere (as in primary sources)
T: (Cicero 1986, 35)

**Preface, foreword, introduction, or similar part of a book**
T: (Rieger 1982, xx–xxi)

**Book published electronically**
If a book is available in more than one format, cite the version you consulted. For books consulted online, list a URL and include an access date. If no fixed page numbers are available, you can include a section title or a chapter or other number.
T: (Austen 2007)

T: (Kurland and Lerner, chap. 10, doc. 19)

**Journal articles**

**Article in a print journal**
In the text, list the specific page numbers consulted, if any. In the reference list entry, list the page range for the whole article.
Article in an online journal
Include a DOI (Digital Object Identifier) if the journal lists one. Do not put a full stop after the DOI—A DOI is a permanent ID that, when appended to https://doi-org.nwulib.nwu.ac.za/ in the address bar of an Internet browser, will lead to the source. If no DOI is available, list a URL and provide an access date.


T: (Kossinets and Watts 2009, 411)

Other sources
Book review


T: (Kamp 2006)

Thesis or dissertation


T: (Choi 2008)

Paper presented at a meeting or conference


T: (Adelman 2009)