

Voice Therapy for Children

An Instructional Manual

Estella P. M. Ma



This publication has been generously supported by Sik Sik Yuen Education Services Fund.

Hong Kong University Press
The University of Hong Kong
Pok Fu Lam Road
Hong Kong
<https://hkupress.hku.hk>

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ISBN 978-988-8754-21-2 (*Paperback*)

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British Library Cataloguing-in-Publication Data
A catalogue record for this book is available from the British Library.

10 9 8 7 6 5 4 3 2 1

Printed and bound by Sunshine (Caimei) Printing Co., Ltd. in Hong Kong, China

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About the Author

Estella P. M. Ma, PhD, is an associate professor of the Faculty of Education and director of the Voice Research Laboratory at the University of Hong Kong. Her research centers on voice science and disorders, with special foci on pediatric voice, motor learning, and instrumental voice assessments. The majority of her research takes a functional perspective and is framed by the health classification scheme of the World Health Organization's International Classification of Functioning, Disability and Health (ICF). She is the co-editor of *Handbook of Voice Assessments* (2011) with Edwin M.-L. Yiu, PhD. She has served as associate editor of *Folia Phoniatica et Logopaedica*, associate editor of *Logopedics Phoniatrics Vocology*, and an editorial board member of the *Journal of Speech, Language, and Hearing Research*. She was the vice-chair and deputy chair of the International Association of Communication Sciences and Disorders (IALP) Voice Committee from 2015 to 2021, and is currently a consultant to the committee. She is also a member of the Voice Foundation Scientific Advisory Board.



Introductory Remarks

What Is the Purpose of This Manual?

The aim of this instructional manual is to serve as a practical companion for student clinicians and entry-level speech pathologists in conducting voice therapy with children. It provides clinicians with practical verbal instructions, content, and materials for the implementation of therapy sessions with children who have voice disorders.

What Is This Manual About?

This instructional manual was originally developed as the voice therapy protocol for a research project funded by Research Grants Council General Research Fund, which aimed at evaluating voice treatment efficiency in school-age children with vocal nodules. The details of the instructions are set out to ensure a standardized protocol for minimizing variability across clinicians:

- Content: Vocal hygiene education and resonant voice therapy (also known as humming).
- Arrangement of sessions: The protocol is presented as six weekly sessions of 45 minutes each.
- Setting: The protocol is designed as group therapy with two to three children in each group. Parents/caretakers are encouraged to attend.
- Use of language: The instructions and tasks described in this manual are most relevant for school-age children.
- Type of vocal pathologies: Benign vocal fold lesions associated with phonotrauma.

What Are the Features of This Manual?

This manual has a number of unique features:

1. The manual contains detailed, step-by-step instructions for each voice therapy session. Clinicians can directly follow the detailed instructions and can immediately implement treatment with patients.
2. Practical tips and strategies for troubleshooting are highlighted at different stages of the therapy.

3. Ready-to-use clinical materials include picture cards for eliciting stimulus (essential when working with young children) and reproducible handouts for clinical use. The picture cards are accompanied with QR codes for downloading and for therapy session preparation.
4. The program described in the manual is evidence-based. This instructional manual was developed from a project funded by the Hong Kong Research Grants Council awarded to the author. The project evaluated the effectiveness of vocal hygiene education with resonant voice training for children with vocal nodules. Our results show that the program is effective in improving voice quality and quality of life in children with voice problems. More details are available in Ma, Cheung, Siu, and Lo (2021) and from the author upon request.

How to Use This Manual Most Efficiently? What Do I Need to Prepare before Using This Manual?

This manual is not intended to be an academic textbook on pediatric voice. It does not provide information on the theory and physiological underpinning of voice exercises. In order to use the manual efficiently, clinicians should have a good knowledge about laryngeal development and biomechanics in children. A good understanding of the language and cognitive level of the age group that you will be working with can also lead to success in conducting voice therapy with children. Readers can refer to Section Three of this manual for suggested references for extended reading.

Finally, clinician should exercise flexibility when implementing the voice therapy protocol. For example, clinicians can adjust the number of sessions and duration of each session according to individual cases and the corresponding clinical settings. When administering the protocol with children of other age groups, modifications may be necessary in order to match the reading level and cognitive processing level of the child. For example, the choice of games and tasks should be age appropriate. Use of technology (e.g., computer software, applications) in voice therapy can be motivating for young children. Clinicians should exercise their clinical knowledge and make adjustments accordingly.

Introduction and Vocal Hygiene

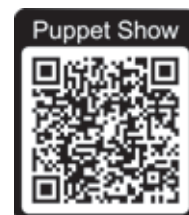
Objectives

Students will

1. demonstrate understanding of laryngeal anatomy and phonatory physiology,
2. demonstrate understanding of laryngeal pathologies associated with phonotrauma,
3. differentiate and rate good versus poor voice qualities, and
4. identify healthy and unhealthy vocal habits.

Materials

- Worksheets: Handout 1. Quiz on vocal hygiene knowledge
Handout 2. “Star of Healthy Voice” song
Handout 3. My healthy voice use agreement
Handout 4. Home practice: Session 1
Handout 5. “Star of Healthy Voice” reward chart
Diagram 1. Laryngeal anatomy and phonatory physiology
Diagram 2. Unhealthy vocal folds
Diagram 3. Voice rating scale
Diagram 4. Vocal hygiene
- Other: Folder for student to carry handouts
Larynx model
Ruler
Stamp
Device to display video and audio files
Healthy and dysphonic voice samples
“Star of Healthy Voice” puppet show (accessed by scanning the QR code)



Session Outline

Introduction and rapport building (5 min)

“Welcome to the voice program. This program consists of 6 sessions. We’ll learn how the voice is produced. We’ll also learn how to achieve healthy and effective voice production.”

引言 (5分鐘)

「歡迎參加聲線治療課程。此課程一共有六堂。我們會學習聲線是如何發出的，亦會一起練習正確而有效的用聲方法。」



Start the session by welcoming the students and building rapport with them. Invite the students to share how they feel about their voice and what they wish to achieve from this program. Create a positive and collaborative atmosphere to promote therapy success.

“Before we start, could each of you share with us ‘How would you describe your voice?’, ‘How do you feel about your voice?’, ‘Does your voice affect your communication with your family and friends?’ and ‘What do you want to learn from this program?’” (The clinician can pay attention to students’ voice qualities when they speak.)

「課程開始之前，我想邀請每一位學員講出你叫甚麼名字，然後跟大家分享：你會怎樣形容你的聲線？你希望從這個課程中得著甚麼？」(言語治療師可從中留意學生的聲線質素和發聲方法)

Voice production mechanism and common voice problems (15 min)

“First, let’s talk about how the voice is produced. The vocal folds are responsible for making sounds. Does anyone know where the vocal folds are?”

發聲原理及常見聲線問題 (15分鐘)

「今日我們會探討聲線是如何發出的。聲線主要是靠聲帶振動而發出。你們知道聲帶在哪裡嗎？」



Help the students to realize the location of the vocal folds by placing the palm over the thyroid notch (that is, the Adam’s apple) and say /a/ for a few seconds. Ask them to feel the vibration during phonation.

Diagram 1.

Laryngeal anatomy and phonatory physiology



圖 1.

發聲原理

“There’s a pair of vocal folds sitting in the larynx. Imagine peeling off the skin around your neck. You’ll see the larynx. (Show students the larynx model.) Here are the vocal folds. (Point out where the vocal folds are.) They’re controlled by nerves and muscles within and around the larynx. The vocal folds work in pairs to produce the voice.”

“Now let’s guess how long our vocal folds are.” (Give students a ruler and have them guess.)

“The vocal folds grow with age. On average, the vocal folds are 2.5 to 3 mm long for newborn babies, 1 to 1.5 cm long for adult females, and 1.5 to 2 cm long for adult males. The tiny vocal folds are responsible for producing different sounds when we speak. Isn’t that amazing?!”

“The vocal folds are wide open during breathing, looking like the shape of the letter ‘V’. When we speak, the vocal folds first come together. They’re then set into vibration when air passes through them from the lungs. This is how the voice is made.” (Demonstrate vocal fold vibration with both hands. Invite students to imitate.)

“Now, try holding your breath and say ‘ah’.” (Provide a model for students to imitate.) “As you can see, it’s nearly impossible to make any sound when no air is passing through the vocal folds. Now let’s breathe in and at the same time say ‘ah’.” (Provide a model for students to imitate.) “How does it feel? Do you talk like this?” (Let students respond.)

「我們的喉嚨裡有一對好朋友：聲帶。幻想把頸部周圍的皮剝掉，你們會看見自己的喉嚨，像這個模型一樣。(給學生展示喉嚨模型)我們的聲帶就在這裡。(在模型上指出聲帶的位置)喉嚨四周和裡面有不同的神經線和肌肉，負責控制聲帶。這一對好朋友會一起合作，發出聲音。」

「你們又猜一猜我們的聲帶有多長？」(給學生一把間尺，讓他們猜。)

「原來，初生嬰兒的聲帶只有2.5至3毫米長。聲帶會隨著年齡增長而增長，到成年時，女士的聲帶平均長1至1.5厘米，而男士的聲帶平均長1.5至2厘米。我們平日說話的聲音都是靠這兩條小小的聲帶發出的。是否很奇妙呢？」

「吸氣呼氣的時候，聲帶是打開的，像一個“V”字。(言語治療師用雙手模仿打開的聲帶)說話的時候，聲帶閉緊。空氣從肺部流出時，穿過聲帶，令聲帶振動，從而發出聲音。」(邀請學生用雙手模仿聲帶振動)

「現在我們來嘗試閉氣時說『呀』。(言語治療師示範並讓學生嘗試)原來閉氣的時候我們幾乎不能發出任何聲音。這次嘗試吸氣的時候說『呀』。(言語治療師示範並讓學生嘗試)覺得怎麼樣？你們平時是這樣說話的嗎？」(讓學生回應)

Humming with Passages and Loudness Control

Objectives

Students will

1. present the results of the voice exercise home program,
2. perform relaxation exercise and abdominal breathing as warm-up exercises,
3. read aloud short passages with improved voice quality using resonant voice,
4. demonstrate precise control of vocal loudness, and
5. evaluate and rate their own voice quality.

Materials

- Worksheets: Handout 18. Practice stimuli: Passage and voice projection
Handout 19. Activity sheet: Change in vocal loudness
Handout 20. Home Practice: Session 5
- Other: Timer
Stamp
Device with computer applications for real-time loudness display

Session Outline

Introduction (5 min)

“Welcome! It’s already the fifth session. Did you do your home exercise last week?” (The clinician checks students’ home exercise chart. If the student completed his/her home program, reward him/her with a stamp.)

引言 (5分鐘)

「歡迎！來到第五堂了。你們有完成家課嗎？」
(言語治療師核對學生的家居練習表。若學生有完成家課，在他/她的獎勵表上蓋一個印。)

Relaxation and breathing exercises (5 min)

“Let’s start with the relaxation exercise.”

“Next, let’s practice abdominal breathing.”

鬆弛運動和腹式呼吸練習 (5分鐘)

「我們先做鬆弛運動。」

「接著，我們會做呼吸練習。」

Resonant voice practice: Nasal /m/ (5 min)

(Students hum with forward focus as warm-up.)

共鳴聲練習——「唔～」(5分鐘)

(學生用共鳴聲哼「唔～」作熱身)

Resonant voice practice: Short passage (10 min)

共鳴聲練習——短文 (10分鐘)

Handout 18.

Practice stimuli: Passage and voice projection

“Good. Now we’ll practice reading aloud a passage with forward resonance. We’ll also practice effective voice projection so that your voice can reach further.”

“Here’s a short passage. First, I’d like you to read it aloud in one single breath. Tell me how you feel and how your voice sounds afterwards.”
(Students can also choose any passage of their own.)

“Yes, the voice sounds tight. This time, I want you to read the passage again. Add a ‘hum’ at the beginning of each sentence. Take a breath for each sentence.”



筆記 18.

共鳴聲練習 + 聲線放送

「好，現在我們來練習如何在朗讀課文時應用共鳴聲。我們還會練習如何有效地把聲線傳送得更遠。」

「這裡有一篇短文。首先，我請大家嘗試一口氣把整篇文章朗讀出來。告訴我，你們感覺如何？你們覺得自己的聲音怎樣？」(學生亦可自選課文)

「對啊，聲音聽起來很繃緊，喉嚨會較疲倦。現在再朗讀課文一遍，請你們在每句句子的開端先輕輕吸氣並加上『唔～』音。」

(The clinician demonstrates passage reading using resonant voice and talks about appropriate speech rate and use of pauses. Students then practice reading aloud the short passage on their own.)

“Excellent! Let’s read the passage again but without the hum. Maintain good forward resonance while reading.” (Give specific feedback to individual students.)

(言語治療師先示範用共鳴聲朗讀短文，教導正確語速和適當停頓。接著，學生自己練習朗讀課文。)

「非常好，我們再讀文章而不用『唔～』音幫助，看看大家能否保持良好的共鳴腔。」(給予學生具體的反饋)

Resonance voice: Loudness control (15 min)

音量控制練習 (15 分鐘)

Handout 19.

Activity sheet: Change in vocal loudness



筆記 19.

音量變化練習

“In this session we’ll also practice control of vocal loudness. Do you know why we need to practice the use of different vocal loudness? We use different vocal loudness in different environments. For example, we speak softly in quiet libraries. We raise the voice when we need to speak on a noisy street.”

“First, practice saying /m/ . . . (single-syllable word) using your comfortable voice. Then, practice saying it from soft to loud.” (The clinician can use mobile phone apps that display real-time vocal loudness as biofeedback.) “Next, practice saying it first from soft to loud, then from loud to soft.” (Make sure that students are using abdominal breathing while practicing.)

“Good. Let’s have someone be the conductor to lead the others to a change in loudness.”

「今堂我們會練習如何控制聲量。你們知道為甚麼我們需要練習使用不同的聲量嗎？在日常生活中，我們會因應需要而用不同聲量說話，例如：在圖書館要輕聲說話；在嘈雜的環境要提高聲量。」

「先練習用舒服聲說『唔 + (單字)』。然後練習由細聲變大聲。(練習時可用量度音量的手機應用程式作視覺反饋) 跟著再練習由細聲變大聲再變細聲。」(練習時，注意學生是否有用腹式呼吸。)

「好，現在請一位同學做指揮，指示其他人的聲量變化。」



When practicing loudness control, children may easily increase loudness with vocal effort, which is not ideal. The clinician should clarify and remind students to raise their vocal loudness using a well-projected voice. Project the voice efficiently with good breath support, good oral resonance, and sufficiently opened mouth during speech.

筆記 1. 健康聲線知多少？

你認為以下各項因素，哪一項有助保護聲線，哪一項會損害聲線？請在適當的空格劃上“√”。

		有助保護 聲線 	會損害 聲線 	不清楚 
1.	有足夠睡眠			
2.	長期咳嗽			
3.	用口呼吸			
4.	多飲水			
5.	保持良好的姿勢			
6.	吸煙			
7.	放縱地大笑 / 大哭			
8.	飲可樂、咖啡、茶			
9.	說話急速			
10.	在空氣混濁的地方交談			
11.	多做伸展運動			
12.	清喉嚨			
13.	扮汽車引擎聲、怪獸聲			
14.	保持心境開朗			
15.	尖叫			
16.	以氣音不出聲（即：秘密聲）說話			
17.	吃刺激性（甜、酸、辣）食物			

筆記 2. 「健康之聲」歌

C 大調

曲/詞: Sunny Wong



健康之聲 健康之聲
唱歌說話 要靠那聲帶發聲
平日說話要慢 輕聲不尖叫
要喝水 多些休息 多放鬆
能學會護理聲音 別人可細聽

用那腹式呼吸 代替胸式呼吸
肚子脹又縮 夠氣不需過急
然後坐下再拉筋 按摩喉嚨
用嘆聲哼聲 將聲音放鬆
回復美妙動聽聲音 能做到



筆記 3. 我的護聲約章

我_____承諾由今天開始：

- 1) 每天飲用六至八杯水
(約 1.5 至 2.0 公升)



- 2) 不大聲尖叫，多用舒服聲說話



- 3) 每天進行護聲練習

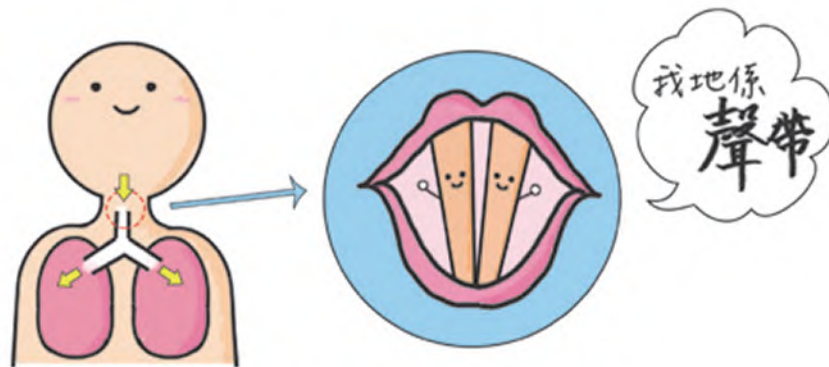


以防止對聲帶造成損害，保持聲線健康。

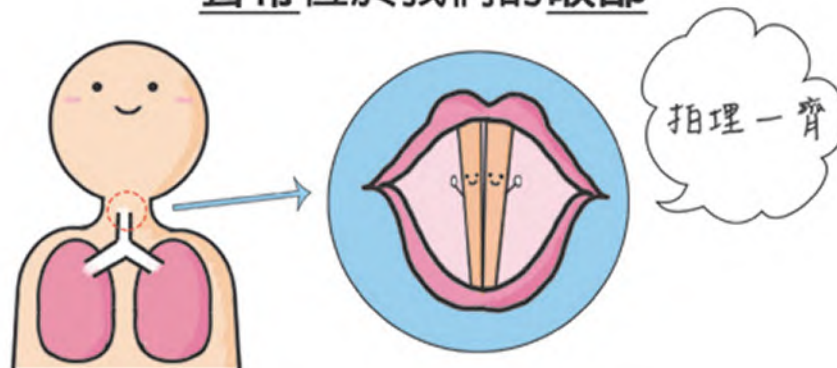


學生簽署:_____

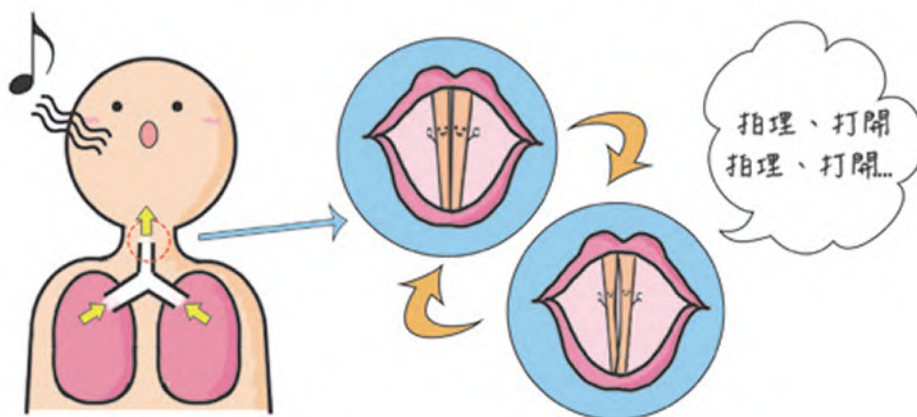
圖 1. 發聲原理



聲帶位於我們的喉部



發聲時，聲帶先拍緊



再配合呼氣去不停振動聲帶，
發出聲音

圖 2. 聲帶生病了

長時間不適當地運用聲線，聲帶有機會受損，變得紅腫，這情況下，聲音會變得沙啞，說話時喉部或會感到痛楚。



Stimulus Cards

(Color version of the stimulus cards can be accessed by scanning the QR code below.)



人物



媽媽












妹妹



明明

單字

 <p>唔</p>	 <p>咩</p>	 <p>麼</p>
 <p>嗚</p>	 <p>檬</p>	 <p>媽</p>
 <p>芒</p>	 <p>貓</p>	 <p>咪</p>