

## Cover Page

- **Official title of the study**

The impact of intraoperative stretching microbreaks on otolaryngologists

- **IRB number**

NCR203032

- **Date of the document**

January 21, 2021

# **Ergonomics in ENT**

## Table of Contents

|                                  |           |
|----------------------------------|-----------|
| <i>Protocol</i>                  | <b>3</b>  |
| <i>Preliminary Questionnaire</i> | <b>6</b>  |
| <i>Pre-surgery questionnaire</i> | <b>10</b> |
| <i>Post-surgery Control</i>      | <b>11</b> |
| <i>Post-surgery Intervention</i> | <b>13</b> |
| <i>Exit Questionnaire</i>        | <b>16</b> |

## Protocol

### ● Principal Investigator

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### ● Co-investigators

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Department: Otolaryngology

Name: Keith Cole, Ph.D.

Department: Physical therapy program

### ● Student investigator

Name: Esther Lee

Department: Otolaryngology

### ● Purpose of the study

- To gather baseline data on the prevalence and impact of musculoskeletal symptoms among otolaryngologists in George Washington University Hospital network.
- To examine the influence of otolaryngology stretching micro-breaks (OSMB) on their physical performance, mental focus, and self-reported pain and discomfort among otolaryngologists in George Washington University Hospital network.

### ● Enrollment Criteria

- Age: 18-80
- Attending physicians, residents, and fellows affiliated with The George Washington University and Children's National Medical Center Division of Otolaryngology-Head & Neck Surgery.

### ● Sample size

- N= 26
  - 9 attending physicians and 8 residents at GWU
  - 9 attending physicians at Children's National Medical Center

### ● Recruitment Methods

- An E-mail will be sent out to attending physicians and residents affiliated at GWU and Children's National inviting them to participate in the study.

- **Research Locations**

- George Washington University Hospital
- Children's National Medical Center

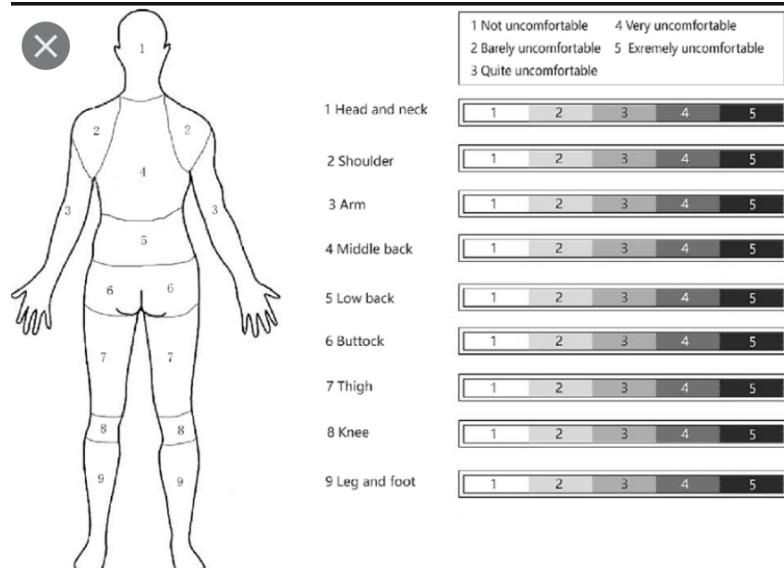
- **Methods**

- **Intervention**

- **Otolaryngology stretching micro-breaks (OSMB)**= standardized microbreak stretch that is designed to perform intraoperatively within the sterile field at medically convenient 20-40 min intervals throughout each procedure.

- **Assessment tools (see the table of content to view survey)**

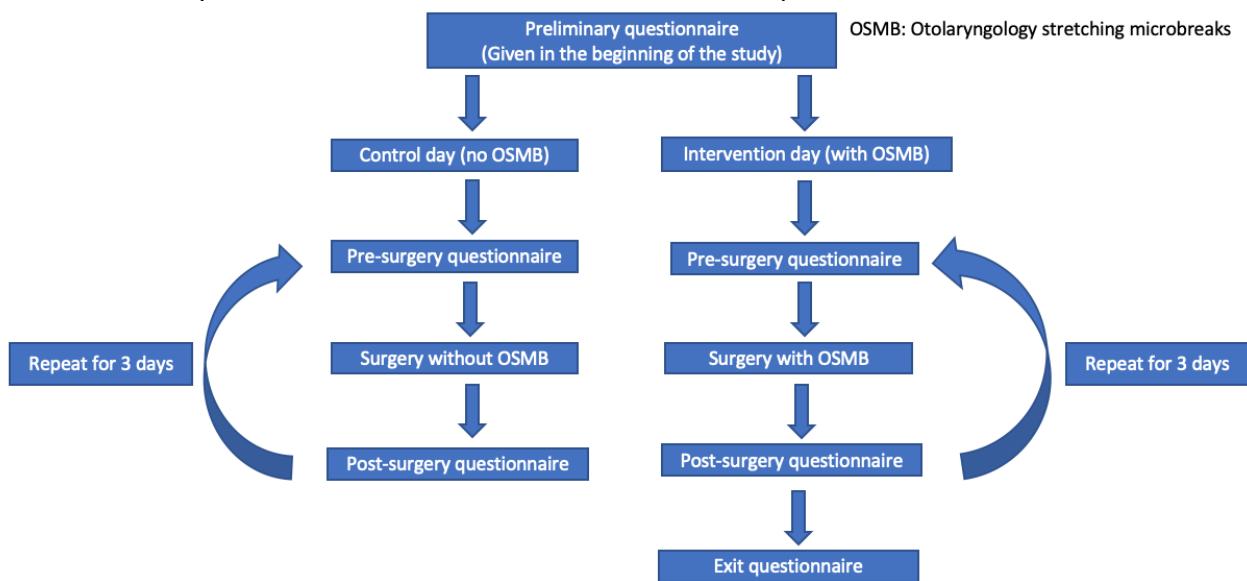
- Preliminary questionnaire- given at the beginning of the study
    - Assess demographic information, ergonomic questions, and musculoskeletal symptom questions
  - Pre-surgery questionnaire (baseline)- given prior to each surgery to establish a baseline
    - Body part discomfort (validated survey with 0-5 score on the neck, shoulder R/L, hand R/L, lower/upper back, knee R/L, foot R/L)



- Post-surgery questionnaire for CONTROL day- given after each surgery
  - Surg-TLX and GOAL questionnaire- assess the degree of difficulty of the surgery
  - Body part discomfort sore
- Post-surgery questionnaire for INTERVENTION day- - given after each surgery
  - Surg-TLX and GOAL questionnaire- assess the degree of difficulty of the surgery
  - Body part discomfort sore
  - Questions on OSMB
- Exit questionnaire after the study is completed
  - 2 questions asking whether the participant would incorporate OSMB in their routine OR cases, and would recommend OSMB to colleagues.

- **Study design**

- Crossover study design
- Control: 3 Non-OSMB surgical days
- Intervention: 3 OSMB surgical days
- In order to reduce confounding variables, study will focus on open neck cases. (e.g. thyroidectomy, parathyroidectomy, neck dissection, etc)
- We will adjust for surgical duration, and use Surg-TLX, and GOAL questionnaires to show no statistically significant difference between control and intervention surgical cases.
- Outcome measures
  - Primary outcome= difference between self-reported body part discomfort score from before/after surgery
    - Control the surgical environment and difficulty using Surg-TLX and GOAL questionnaires. The score should be statistically insignificant among various surgeries.
  - Secondary outcome= impact of OSMB on physical performance, discomfort/pain, fatigue, and mental focus
  - Tertiary outcome= distraction and workflow interruption of OSMB



## ● Statistics

- Descriptive statistics to calculate the prevalence and impact of musculoskeletal symptoms
- Descriptive statistics to characterize demographic information on participants
- Linear mixed models: Used to test for an association between pain and the targeted micro-break intervention
- Statistical significance is set at 0.05 (Bonferroni adjustment for measurement on 11 body parts.)

## Preliminary Questionnaire

Confidential

Ergonomic survey  
Page 1 of 4

### Preliminary questionnaire

Record ID

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#### Demographic information

Today's date

---

What is your gender?

- Male
- Female
- Transgender
- Other
- Prefer not to answer

Other (please specify)

---

What is your age?

---

What is your height in inches?

---

What is your weight in pounds?

---

BMI

---

What is your dominant hand?

- Left
- Right
- Both

What is your surgical title?

- Resident
- Fellow
- Attending

What is your postgraduate year (PGY) equivalent level?

- PGY1
- PGY2
- PGY3
- PGY4
- PGY5

How many years of surgical training and/or practice have you completed?

- 0-1 year
- 2-5 years
- 6-10 years
- 11-20 years
- Over 20 years

How many days a week do you perform surgery?

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How many cases do you perform on a surgery day?

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Page 2 of 4

What is the average duration of each case in hours?

Do you have an exercise routine?

Yes  
 No

How many days a week do you exercise?

What form of exercise(s) do you perform? (select all that applies)

Stretching  
 Yoga  
 Pilates  
 Strength training  
 Cardio training (running, walking, swimming, cycling, etc.)  
 Other

Other (please specify)

**Ergonomic Questions**

Have you experienced any work-related musculoskeletal symptoms while performing the surgery?

Yes  
 No

What is the PRIMARY area of your body that is most bothersome to you? (select one answer)

Neck  
 Shoulder  
 Lower back  
 Upper back  
 Hips  
 Legs  
 Feet  
 Arms  
 Hands  
 None

What is the SECONDARY area of your body that is most bothersome to you? (select one answer)

Neck  
 Shoulder  
 Lower back  
 Upper back  
 Hips  
 Legs  
 Feet  
 Arms  
 Hands  
 None

What is the TERTIARY area of your body that is most bothersome to you? (select one answer)

Neck  
 Shoulder  
 Lower back  
 Upper back  
 Hips  
 Legs  
 Feet  
 Arms  
 Hands  
 None

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Page 3 of 4

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When did you begin to experience these musculoskeletal symptoms?

PGY1  
 PGY2  
 PGY3  
 PGY4  
 PGY5  
 During fellowship  
 0-1 year into practice  
 2-5 years into practice  
 6-10 years into practice  
 11 or more years into practice

---

How often do these musculoskeletal symptoms occur?

Rarely  
 Half of surgery cases  
 Most surgery cases  
 Every surgery case

---

Please estimate the timeframe of symptom onset?

< 30min  
 30min to 1hr  
 1-3hrs  
 3-6hrs  
 >6hrs  
 Post-surgery  
 Following day  
 Other

---

Other (please specify)

---

Does the use of specific surgical equipment elicit symptoms more frequently? (select all that applies)

Headlight  
 Robot  
 Endoscopic instruments  
 Loupes  
 Microscope  
 Other

---

What risk reduction strategies do you perform in the OR to help alleviate musculoskeletal issues? (select all that applies)

Ignore it  
 Adjust the surgical field  
 Change the bed height  
 Use a step stool to adjust the height  
 Change instruments  
 Stools  
 Standing pads  
 Timed-Breaks  
 Intraoperative stretching  
 Change position  
 Time away from the OR  
 Treatment  
 Other

---

Others (please specify)

---

Have you had to stop performing this type of surgery due to musculoskeletal symptoms?

Yes  
 No

---

Have you ever taken time off of work due to musculoskeletal pain/injury?

Yes  
 No

---

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Page 4 of 4

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Have you ever seen any of the following for treatment or consultation? (Select all that apply)

- No treatment
- Massage therapist
- Acupuncture
- Personal trainer
- Physical therapist
- Chiropractor
- PM&R
- Physician
- Surgeon
- Other

---

Other (please specify)

---

Do you routinely stretch or exercise specific muscle groups outside of the operating room to improve trouble areas?

- Yes
- No

---

Have you had any formal training, lectures, or discussion regarding the following areas? Check all that apply

- Posture/body mechanics in the OR head position, shoulders, spine, pelvis
- Ergonomic set up of operating table, microscope, robot
- Patient transfer techniques
- Others
- None

---

Others (please specify)

---

Are you concerned that your pain would limit the ability to perform surgery in the future?

- Yes
- No

## Pre-surgery questionnaire

*Confidential*

*Ergonomic survey*  
Page 1 of 1

### Pre-surgery questionnaire

Record ID \_\_\_\_\_

Today's date \_\_\_\_\_

#### Body part discomfort scores

- 1 Not uncomfortable
- 2 Barely uncomfortable
- 3 Quite uncomfortable
- 4 Very uncomfortable
- 5 Extremely uncomfortable

|                 | 1                     | 2                     | 3                     | 4                     | 5                     |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Neck            | <input type="radio"/> |
| Shoulder, right | <input type="radio"/> |
| Shoulder, left  | <input type="radio"/> |
| Hand, right     | <input type="radio"/> |
| Hand, left      | <input type="radio"/> |
| Lower back      | <input type="radio"/> |
| Upper back      | <input type="radio"/> |
| Knee, right     | <input type="radio"/> |
| Knee, left      | <input type="radio"/> |
| Foot, right     | <input type="radio"/> |
| Foot, left      | <input type="radio"/> |

## Post-surgery Control

Confidential

Ergonomic survey  
Page 1 of 2

## Post-surgery control

Record ID

Today's date

What case have you performed today?

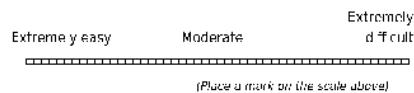
- Thyroid
- Parathyroid
- Open neck
- Facial trauma
- Neck trauma
- Other

Other (please specify)

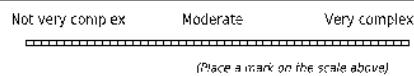
How long was the case? (in hours)

### GOAL and Surg-TLX subscales

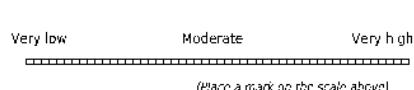
Degree of difficulty- This procedure was:



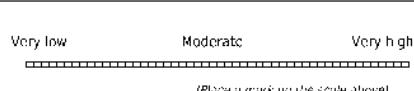
#### Task Complexity: How complex was the procedure?



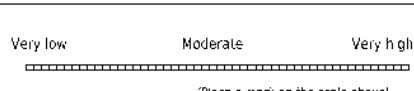
Distraction: How distracting was the operating environment?



**Mental Demand:** How mentally demanding was the procedure?



Physical demand: How physically demanding was the procedure?



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Page 2 of 2

**Body part discomfort scores:**

- 1 Not uncomfortable**
- 2 Barely uncomfortable**
- 3 Quite uncomfortable**
- 4 Very uncomfortable**
- 5 Extremely uncomfortable**

|                 | 1                     | 2                     | 3                     | 4                     | 5                     |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Neck            | <input type="radio"/> |
| Shoulder, right | <input type="radio"/> |
| Shoulder, left  | <input type="radio"/> |
| Hand, right     | <input type="radio"/> |
| Hand, left      | <input type="radio"/> |
| Lower back      | <input type="radio"/> |
| Upper back      | <input type="radio"/> |
| Knee, right     | <input type="radio"/> |
| Knee, left      | <input type="radio"/> |
| Foot, right     | <input type="radio"/> |
| Foot, left      | <input type="radio"/> |

What was your primary position during the surgery?

- Standing
- Seated
- Standing and Seated

What surgical equipments have you used during the case? (select all that applies)

- Headlight
- Robot
- Laparoscopic equipment
- Loupes
- Microscope
- Other

Other (please specify)

## Post-surgery Intervention

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Ergonomic survey  
Page 1 of 3

### Post-surgery intervention

Record ID

Today's date

What case have you performed today?

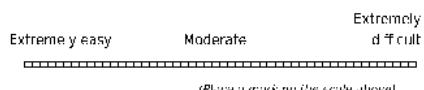
- Thyroid
- Parathyroid
- Open neck
- Facial trauma
- Neck trauma
- Other

Other (please specify)

How long was the case? (in hours)

#### GOAL and Surg-TLX subscales

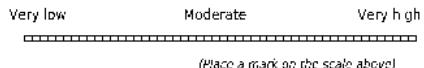
Degree of difficulty- This procedure was:



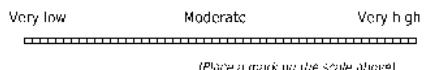
Task Complexity: How complex was the procedure?



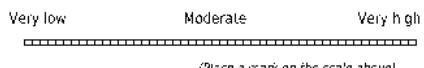
Distraction: How distracting was the operating environment?



Mental Demand: How mentally demanding was the procedure?



Physical demand: How physically demanding was the procedure?



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Page 2 of 3

**Body part discomfort scores:****1 Not uncomfortable****2 Barely uncomfortable****3 Quite uncomfortable****4 Very uncomfortable****5 Extremely uncomfortable**

|                 | 1                     | 2                     | 3                     | 4                     | 5                     |
|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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| Hand, right     | <input type="radio"/> |
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| Upper back      | <input type="radio"/> |
| Knee, right     | <input type="radio"/> |
| Knee, left      | <input type="radio"/> |
| Foot, right     | <input type="radio"/> |
| Foot, left      | <input type="radio"/> |

What was your primary position during the surgery?

Standing  
 Seated  
 Standing and Seated

What surgical equipments have you used during the case? (select all that applies)

Headlight  
 Robot  
 Laparoscopic equipment  
 Loupes  
 Microscope  
 Other

Other (please specify)

How often have you performed micro-break stretches?

Every 20 minutes  
 Every 30 minutes  
 Every 45 minutes  
 Every hour  
 Every 1.5 hours  
 Every 2 hours  
 Random time

How many micro-break stretches have you performed during the surgery?

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Page 3 of 3

| What is the impact of microbreak stretches have on... | Diminished            | Did not change        | Improved              |
|---|-----------------------|-----------------------|-----------------------|
| Physical performance                                  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Discomfort and pain                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Fatigue   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Mental focus  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**1= No distraction or no impact****10= Most distraction or most impact**

|   | 1                     | 2                     | 3                     | 4                     | 5                     | 6                     | 7                     | 8                     | 9                     | 10                    |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| To what degree, if any, did the exercise distract you from performing or assisting in the surgical procedure? | <input type="radio"/> |
| To what degree, if any, would you say that the exercises impacted the flow of the surgery?                    | <input type="radio"/> |

## Exit Questionnaire

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*Ergonomic survey*  
Page 1 of 1

### Exit questionnaire

---

Record ID

---

---

Today's date

---

Would you like to incorporate the microbreak into  
your OR routine?

Yes  
 No

---

Would you recommend microbreak to your colleagues?

Yes  
 No