

Cover Page

- **Official title of the study**

The impact of intraoperative stretching microbreaks on otolaryngologists

- **IRB number**

NCR203032

- **Date of the document**

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Ergonomics in ENT

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Protocol

- **Principal Investigator**

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- **Co-investigators**

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- **Student investigator**

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- **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)

Legend:

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

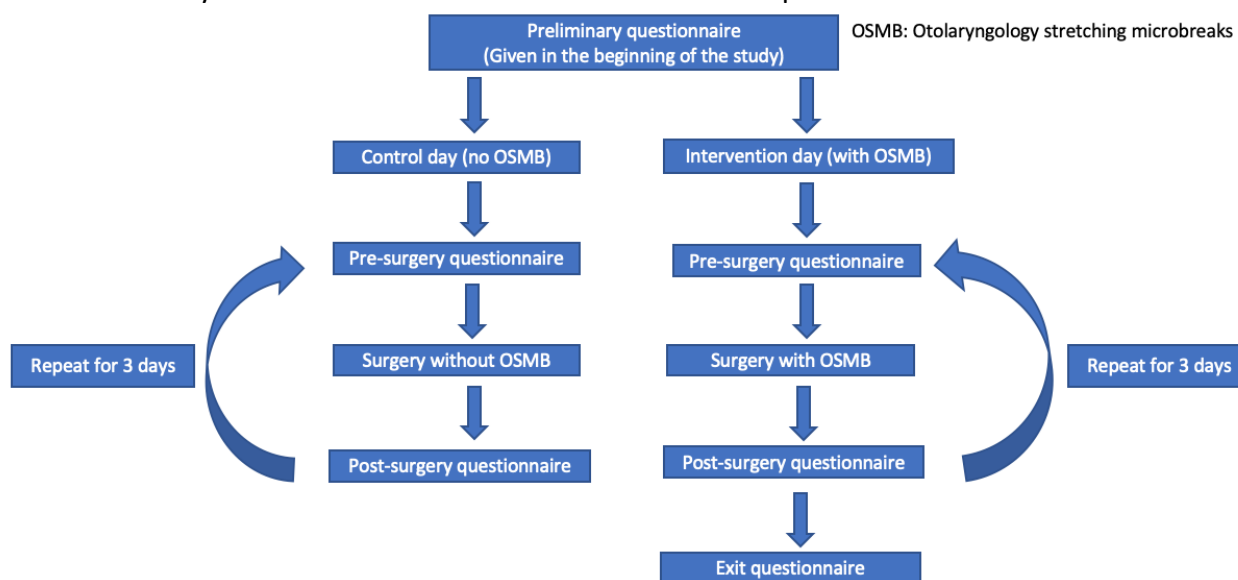
Body parts and scales:

Body Part	1	2	3	4	5
1 Head and neck					
2 Shoulder					
3 Arm					
4 Middle back					
5 Low back					
6 Buttock					
7 Thigh					
8 Knee					
9 Leg and foot					

- 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 score
- 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 score
 - 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

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Ergonomic survey
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Preliminary questionnaire

Record ID

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?

How many cases do you perform on a surgery day?

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 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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When did you begin to experience these musculoskeletal symptoms?	<input type="radio"/> PGY1 <input type="radio"/> PGY2 <input type="radio"/> PGY3 <input type="radio"/> PGY4 <input type="radio"/> PGY5 <input type="radio"/> During fellowship <input type="radio"/> 0-1 year into practice <input type="radio"/> 2-5 years into practice <input type="radio"/> 6-10 years into practice <input type="radio"/> 11 or more years into practice
How often do these musculoskeletal symptoms occur?	<input type="radio"/> Rarely <input type="radio"/> Half of surgery cases <input type="radio"/> Most surgery cases <input type="radio"/> Every surgery case
Please estimate the timeframe of symptom onset?	<input type="radio"/> < 30min <input type="radio"/> 30min to 1hr <input type="radio"/> 1-3hrs <input type="radio"/> 3-6hrs <input type="radio"/> >6hrs <input type="radio"/> Post-surgery <input type="radio"/> Following day <input type="radio"/> Other
Other (please specify)	_____
Does the use of specific surgical equipment elicit symptoms more frequently? (select all that applies)	<input type="checkbox"/> Headlight <input type="checkbox"/> Robot <input type="checkbox"/> Endoscopic instruments <input type="checkbox"/> Loupes <input type="checkbox"/> Microscope <input type="checkbox"/> Other
What risk reduction strategies do you perform in the OR to help alleviate musculoskeletal issues? (select all that applies)	<input type="checkbox"/> Ignore it <input type="checkbox"/> Adjust the surgical field <input type="checkbox"/> Change the bed height <input type="checkbox"/> Use a step stool to adjust the height <input type="checkbox"/> Change instruments <input type="checkbox"/> Stools <input type="checkbox"/> Standing pads <input type="checkbox"/> Timed-Breaks <input type="checkbox"/> Intraoperative stretching <input type="checkbox"/> Change position <input type="checkbox"/> Time away from the OR <input type="checkbox"/> Treatment <input type="checkbox"/> Other
Others (please specify)	_____
Have you had to stop performing this type of surgery due to musculoskeletal symptoms?	<input type="radio"/> Yes <input type="radio"/> No
Have you ever taken time off of work due to musculoskeletal pain/injury?	<input type="radio"/> Yes <input type="radio"/> No

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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

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*Ergonomic survey
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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"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoulder, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoulder, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knee, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knee, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foot, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foot, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Post-surgery Control

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Ergonomic survey
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Post-surgery control

Record ID	
Today's date	
What case have you performed today?	<input type="radio"/> Thyroid <input type="radio"/> Parathyroid <input type="radio"/> Open neck <input type="radio"/> Facial trauma <input type="radio"/> Neck trauma <input type="radio"/> Other
Other (please specify)	
How long was the case? (in hours)	

GOAL and Surg-TLX subscales

Degree of difficulty- This procedure was:	<div>Extremely easy Moderate Extremely difficult</div> <div>=====</div> <div>(Place a mark on the scale above)</div>
Task Complexity: How complex was the procedure?	<div>Not very complex Moderate Very complex</div> <div>=====</div> <div>(Place a mark on the scale above)</div>
Distraction: How distracting was the operating environment?	<div>Very low Moderate Very high</div> <div>=====</div> <div>(Place a mark on the scale above)</div>
Mental Demand: How mentally demanding was the procedure?	<div>Very low Moderate Very high</div> <div>=====</div> <div>(Place a mark on the scale above)</div>
Physical demand: How physically demanding was the procedure?	<div>Very low Moderate Very high</div> <div>=====</div> <div>(Place a mark on the scale above)</div>

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Body part discomfort scores:					
1 Not uncomfortable	2 Barely uncomfortable	3 Quite uncomfortable	4 Very uncomfortable	5 Extremely uncomfortable	
Neck	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoulder, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoulder, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knee, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knee, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foot, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foot, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<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
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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:

Extremely easy Moderate Extremely difficult
 =====
 (Place a mark on the scale above)

Task Complexity: How complex was the procedure?

Not very complex Moderate Very complex
 =====
 (Place a mark on the scale above)

Distraction: How distracting was the operating environment?

Very low Moderate Very high
 =====
 (Place a mark on the scale above)

Mental Demand: How mentally demanding was the procedure?

Very low Moderate Very high
 =====
 (Place a mark on the scale above)

Physical demand: How physically demanding was the procedure?

Very low Moderate Very high
 =====
 (Place a mark on the scale above)

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Body part discomfort scores:					
1 Not uncomfortable	2 Barely uncomfortable	3 Quite uncomfortable	4 Very uncomfortable	5 Extremely uncomfortable	
Neck	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoulder, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shoulder, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hand, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lower back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Upper back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knee, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Knee, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foot, right	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Foot, left	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<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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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"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discomfort and pain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fatigue	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mental focus	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<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"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To what degree, if any, would you say that the exercises impacted the flow of the surgery?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Exit Questionnaire

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Ergonomic survey
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Exit questionnaire

Record ID	<div></div>
Today's date	<div></div>
Would you like to incorporate the microbreak into your OR routine?	<div><input type="radio"/> Yes <input type="radio"/> No</div>
Would you recommend microbreak to your colleagues?	<div><input type="radio"/> Yes <input type="radio"/> No</div>

