

Dental Ergonomics

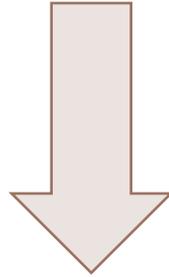
Family HealthCare

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Project Overview

Purpose: Address Important Ergonomics for FHC Dentists and Dental Hygienists



Ensure FHC employees stay well!

Who Does This Impact:

Primarily: Current Clinicians

Secondary: Administration, Patients, Future Clinicians

As You Know...

Dentistry Profession Job Demands:

- Prolonged, Unnatural, Static Postures
- Extended Times Seated/Unsupported, Elevated Arms
- Strength-Demanding Hand Movements
- Repetitive Movements



**Builds
Over
Time!**

Places Individuals at Risk for:¹

- Nagging Aches & Pains: Intermittent --> Constant
- Poor Postural Habits

Prevalence^{1,2}

- **2/3** of dentists **experience pain** within a 12-month period
 - *Most Common Symptom: Low Back Pain*
- **Up to 30%** of dentists may be required to **retire early**
- Dental students working long clinic hours were **12x** more likely to report discomfort vs. students not within clinical years
 - **Developing Problems From the Beginning!**

Is FHC Comparable to a Study on Dental Ergonomics?

Musculoskeletal Conditions	Percentage within last 12 months
Neck pain	58%
Shoulder pain	29%
Pain Elbows	43%
Pain in wrists/ Hands	52%
Upper Back Pain	37%
Low Back Pain	42%
Pain in one or both hips and thighs	2%
Pain in one or both knees	4%
Pain in one or both ankles/feet	2%
Number and % of participants who at any time during the last 12 months received medical treatment	17%

[Table/Fig-4]: Data obtained from Standardized Nordic Questionnaire (SNQ) about pain and discomfort in various locomotor organs

Before & After Adding Ergonomics

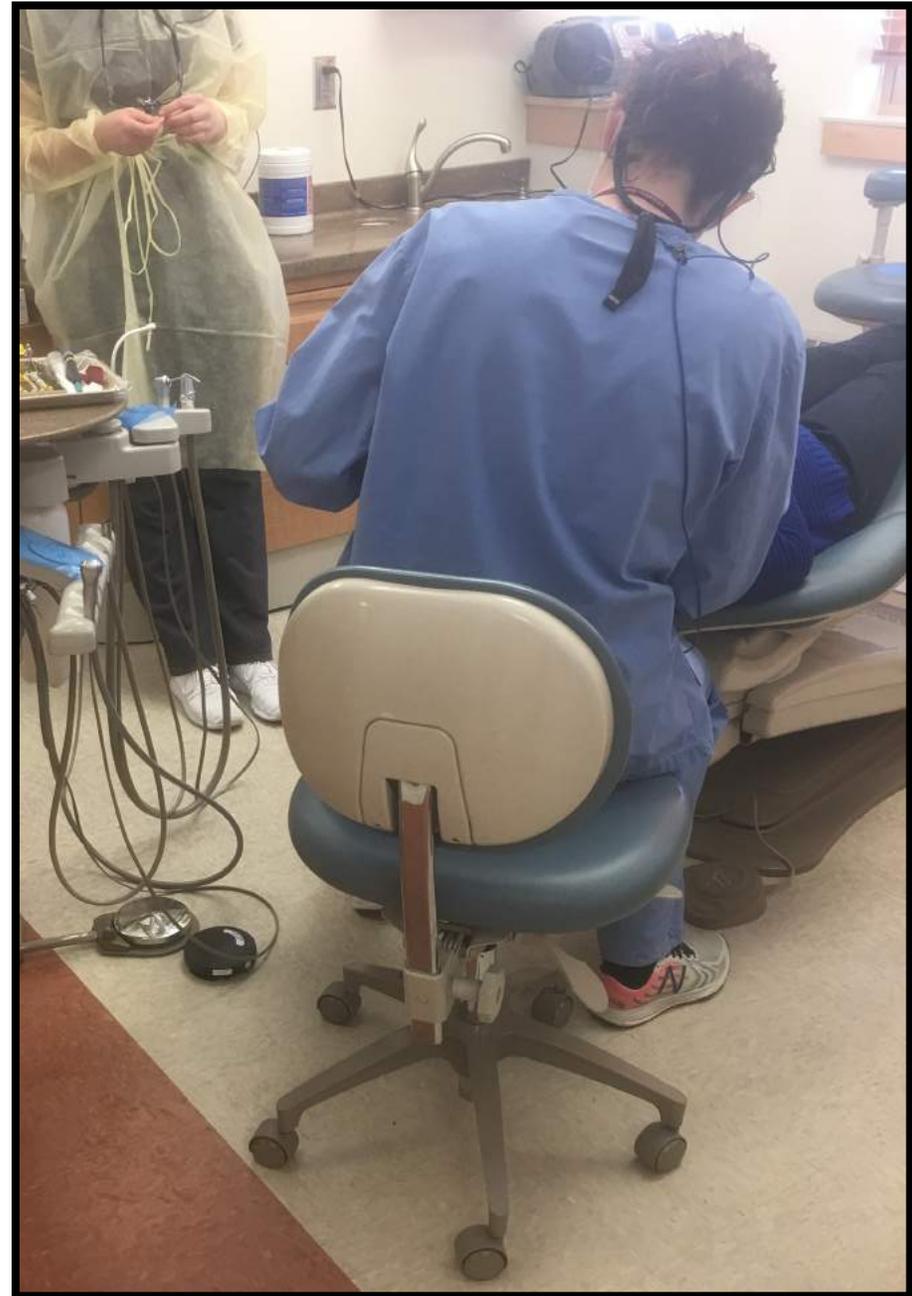
Musculoskeletal Conditions	Percentage within last 12 months n=23	Within last 3 months after application of DMAIC
Neck pain	11 (47.8%)	5 (21.7%)
Shoulder pain	9 (39.1%)	4 (17.39%)
Pain in Elbows	6 (26%)	5 (21.7%)
Pain in wrists/ Hands	8 (34.7%)	3 (13.04%)
Upper Back Pain	13 (56.2%)	4 (17.3%)
Low Back Pain	7 (30.4%)	3 (13.04%)
Pain in one or both hips and thighs	0 (%)	0 (%)
Pain in one or both knees	3(13.04%)	1 (4.3%)
Pain in one or both ankles/feet	2 (8.6%)	0(%)
p-value	0.048	

[Table/Fig-5]: Comparison of data obtained from respondents who applied ergonomics at their workplace

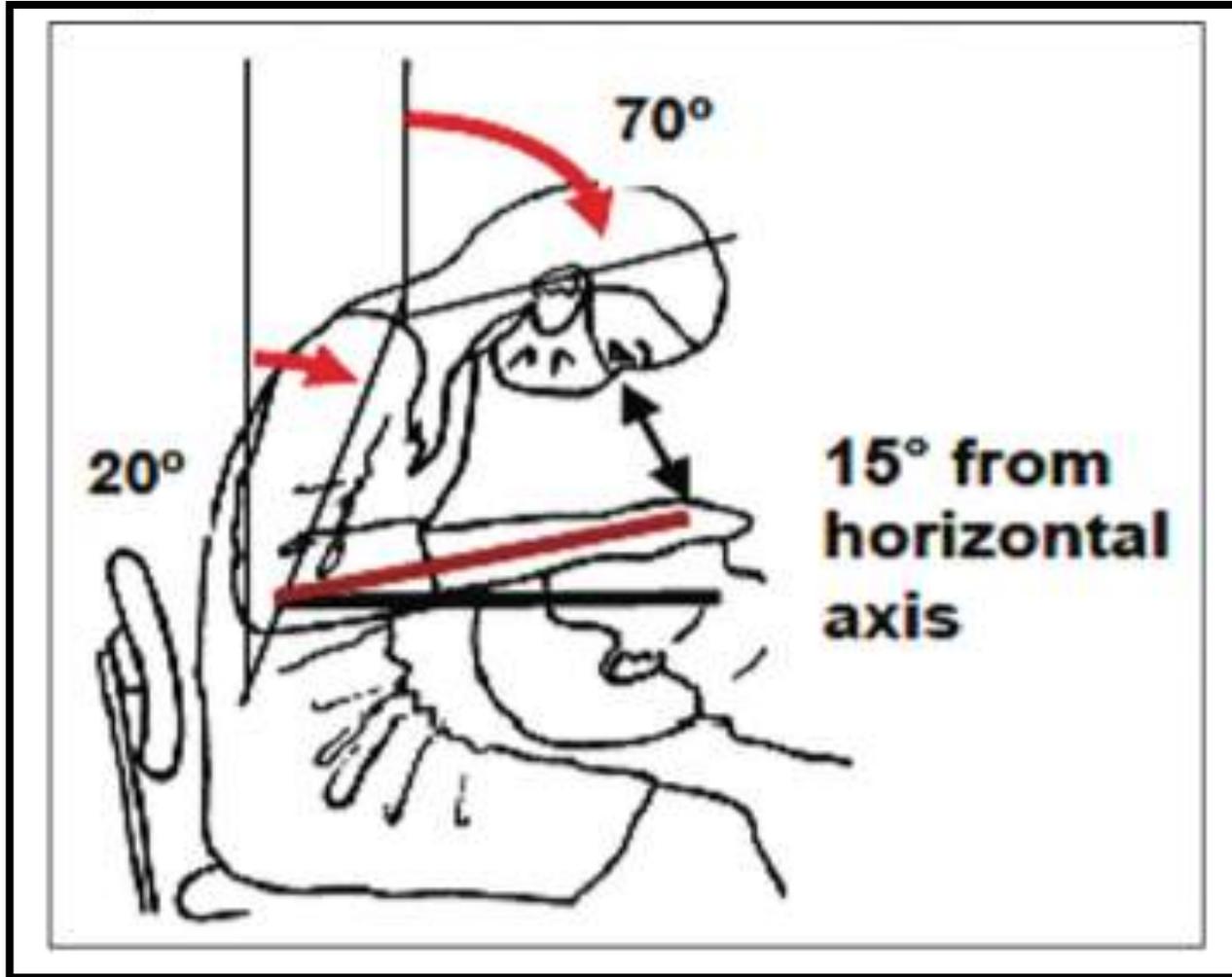
What Did We See and Hear at FHC?

FHC Observation

- Excessive head flexion and trunk rotation
 - Forward head posture
- Static positions
- Repetitive motions
- Prolonged periods of sitting



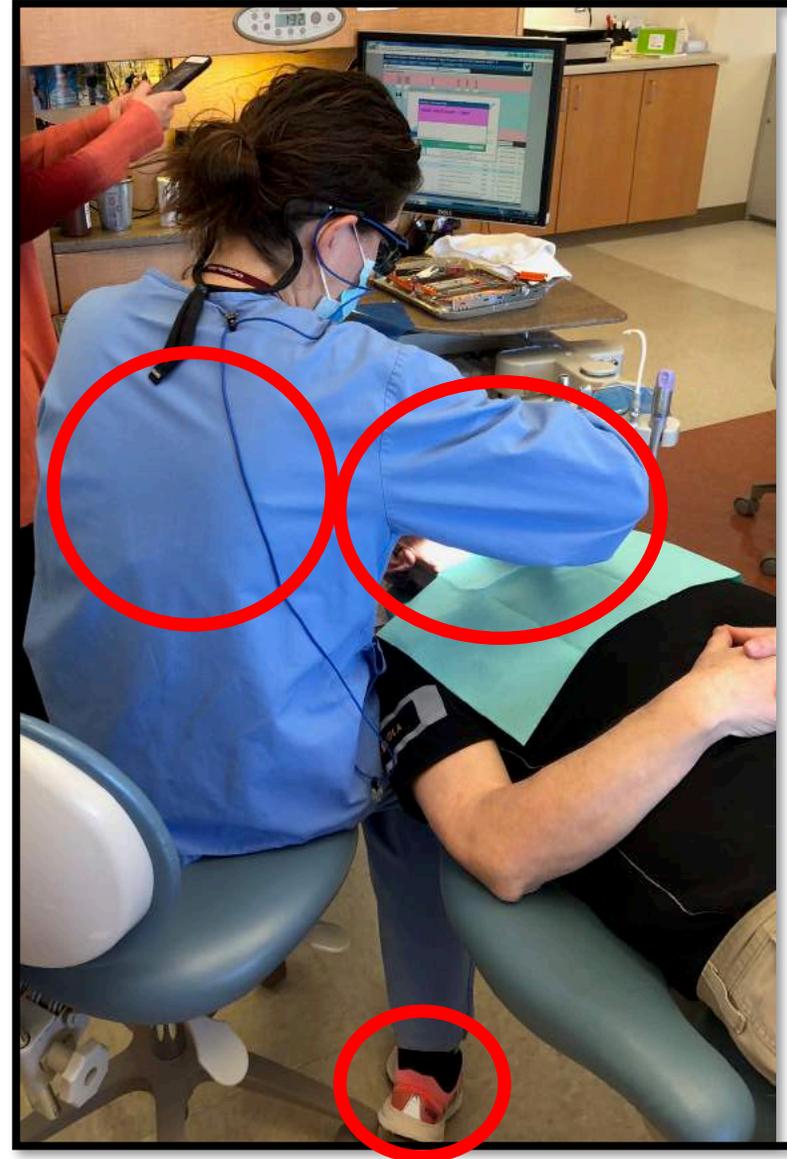
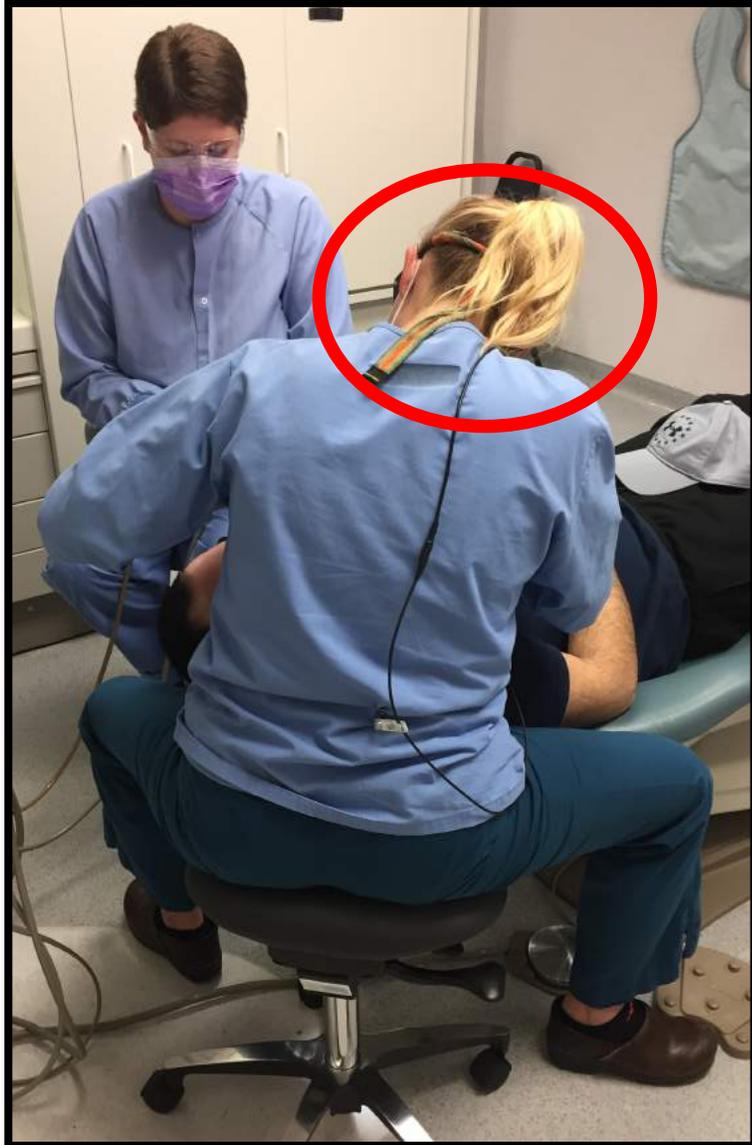
Example:



http://www.amhsjournal.org/temp/ArchMedHealthSci31138-7406745_203427.pdf



Example:



FHC Employee Report

- Not stretching enough throughout the day
- Low back pain
- Upper back pain
- Wrist and finger stiffness
- Utilizing other services regularly
 - Massage therapists, Chiropractors, etc.

What Can We Do About It?

Can't Change:

- The aspects of the profession previously listed
- Filled schedule of lengthy, repetitive procedures
- Long working hours

Can Change:

- How you feel *BEFORE, DURING, and AFTER* a day of work
 - Habitual Changes
 - Equipment Recommendations
 - Combative Strategies

Helpful Hints to Keep Our Bodies Feeling Good!!

"How to Fit the **Job to You** and NOT You to the Job."

Postural Training^{1,4}

Neck and upper back discomfort

- Less than 30 degrees of neck flexion while in seated
- Use of dental loupes kept at 2x magnification

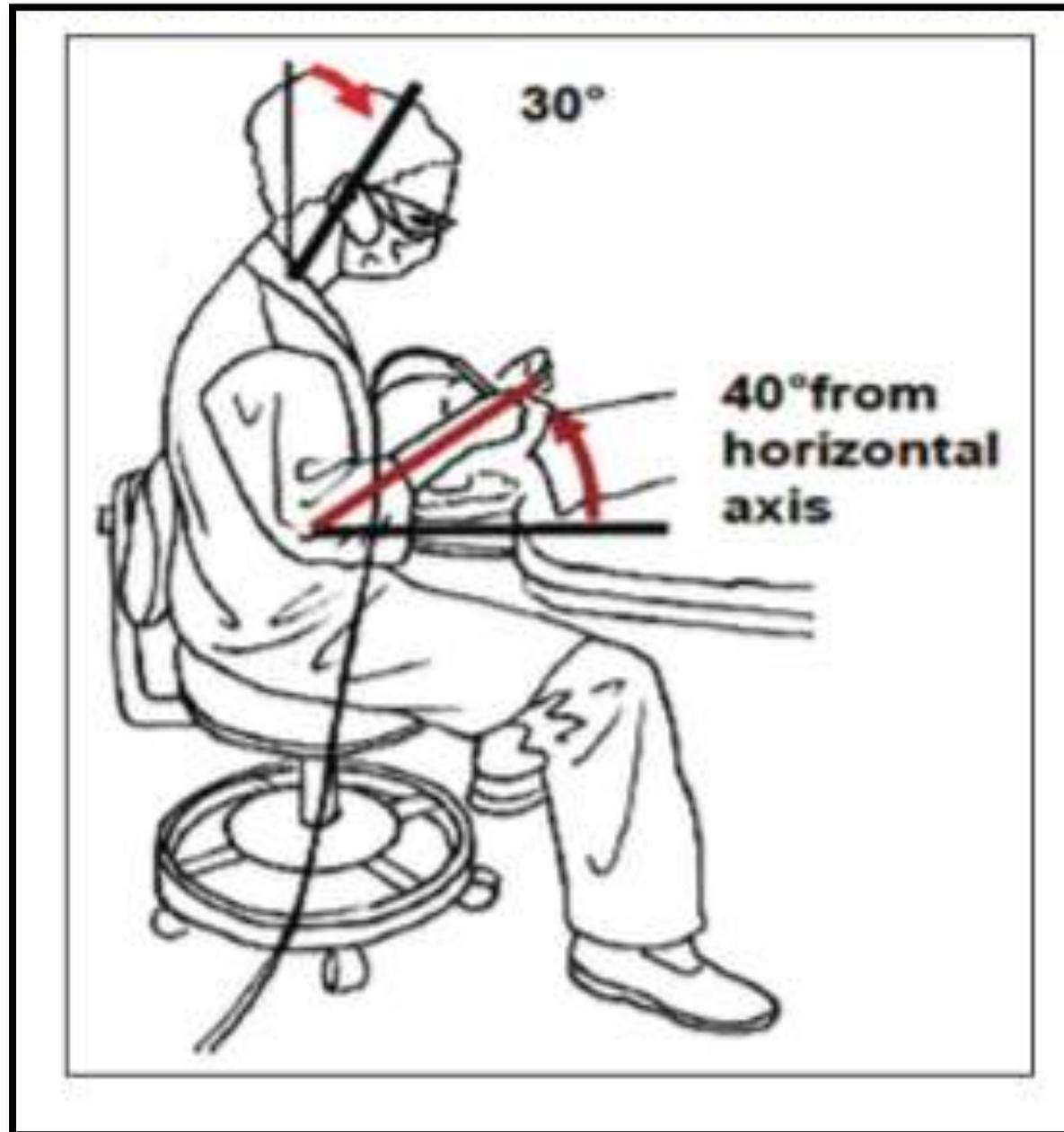
Shoulder and wrist discomfort

- Keep arm rests at a comfortable height to decrease pressure on elbows and shoulders

Low back discomfort

- Use of a saddle chair
- Alternative: use arm rests **or** chairs with neutral posture, neck and shoulder support, and adjustable height

Example:



Saddle Chairs

- Been shown to provide proper spinal curve
- Decreases stress on muscles and joints
- Improves and promotes proper body mechanics



<http://www.bambach.co.uk/assets/images/dental/seat-positions.jpg>

Instrumental and General Hints^{1,2}

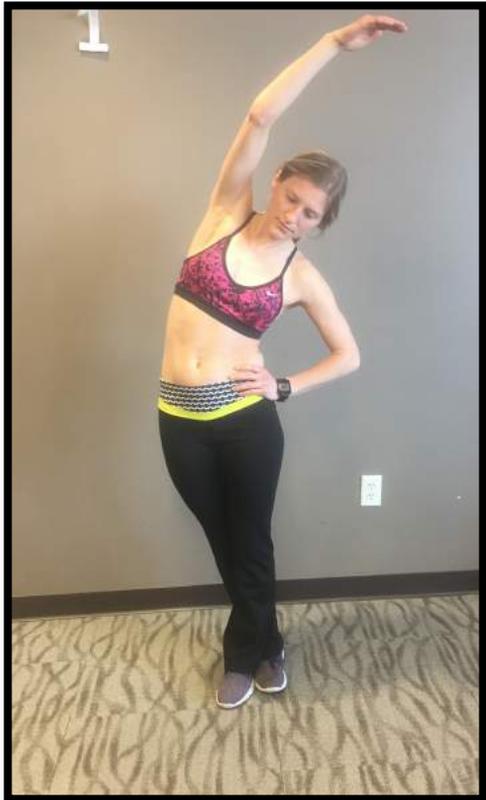
- **Vibrating instruments**
 - Take microbreaks while using instruments such as the Cavitron
 - 60 seconds on/10 seconds off
- **General**
 - Keep forearms below shoulder while working on patients and with forceful arm movements
 - Keep both feet flat on the floor
 - Be sure tools are at an accessible range from patient work station to prevent excess twisting/turning



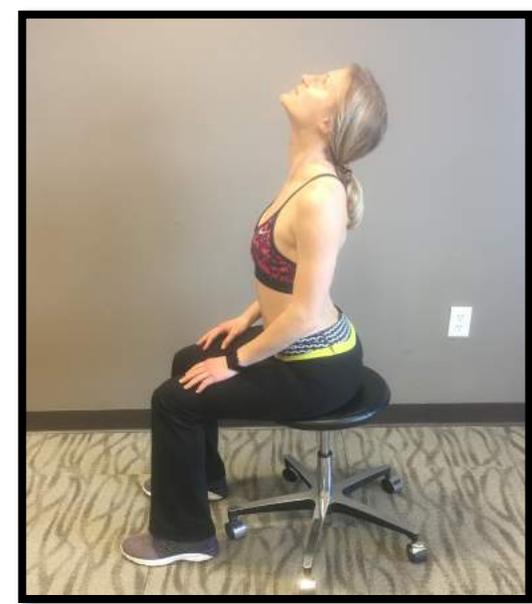
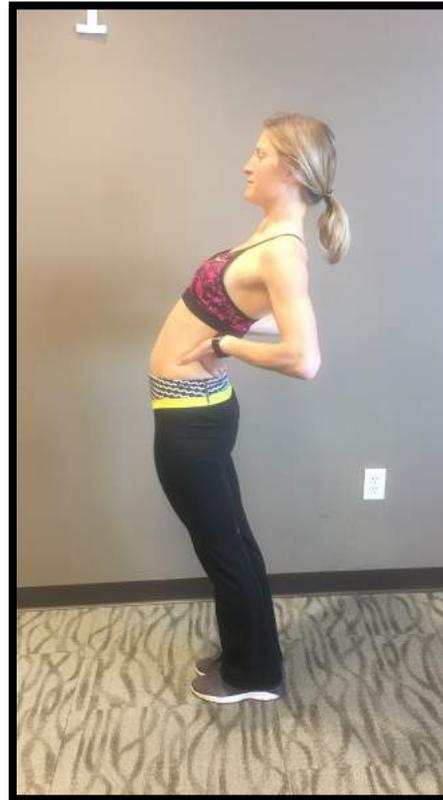
Combative Strategies For Dentists and Dental Hygienists

Low Back Pain

Q-L Stretch



Lumbar Extension

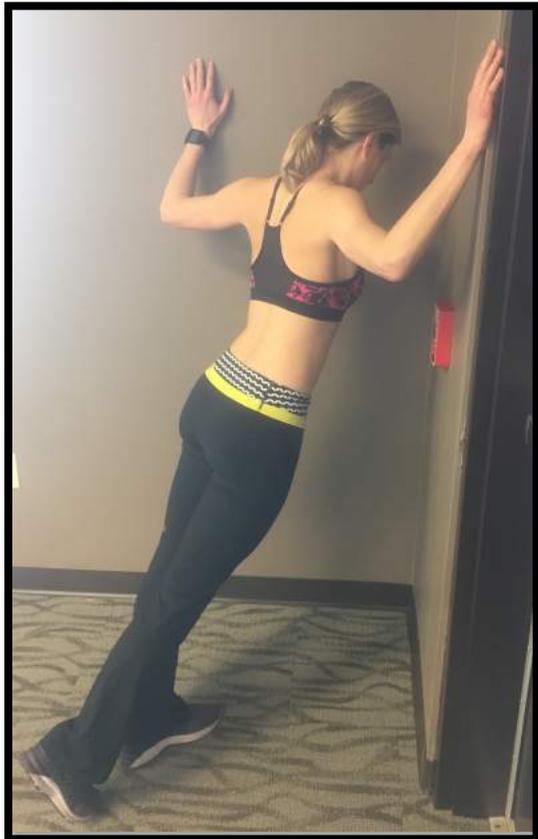


Seated Cat/Cow

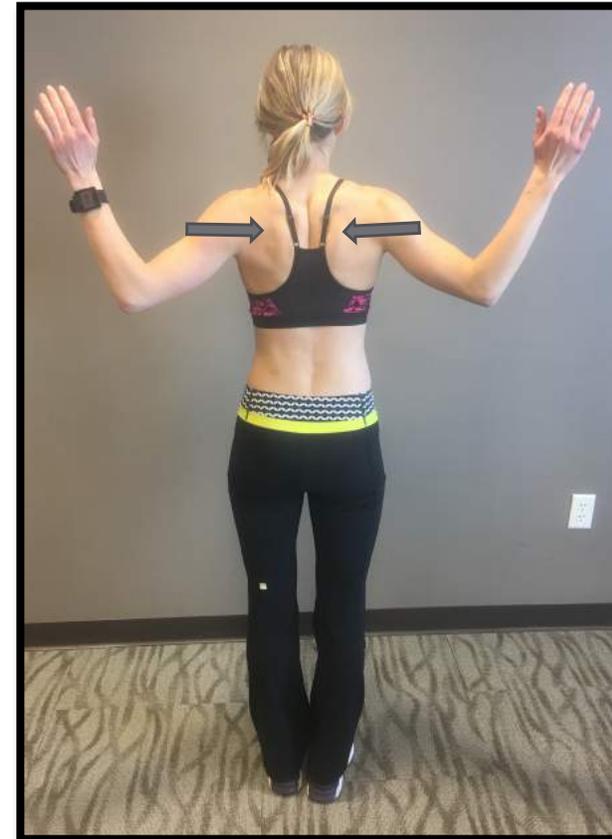


Upper Back Pain

Pectoral Stretch

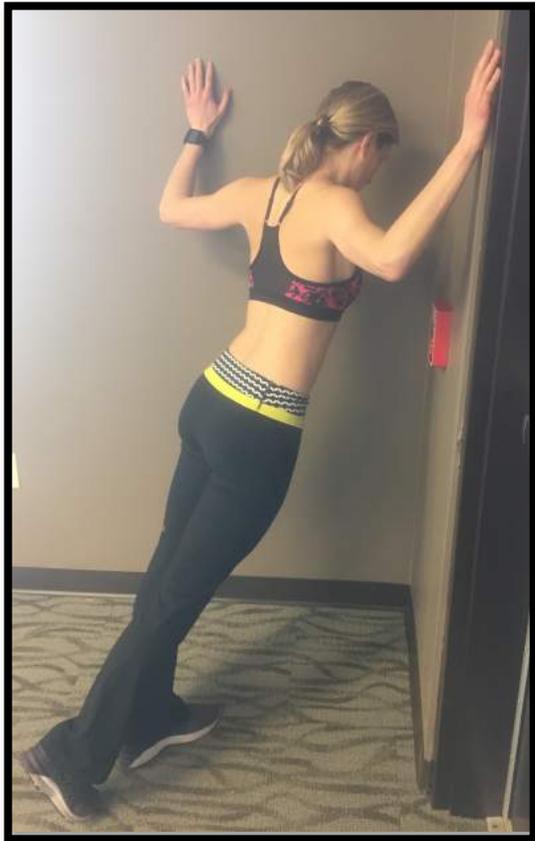


Scapular Squeezes



Upper Back Pain

Pectoral Stretch

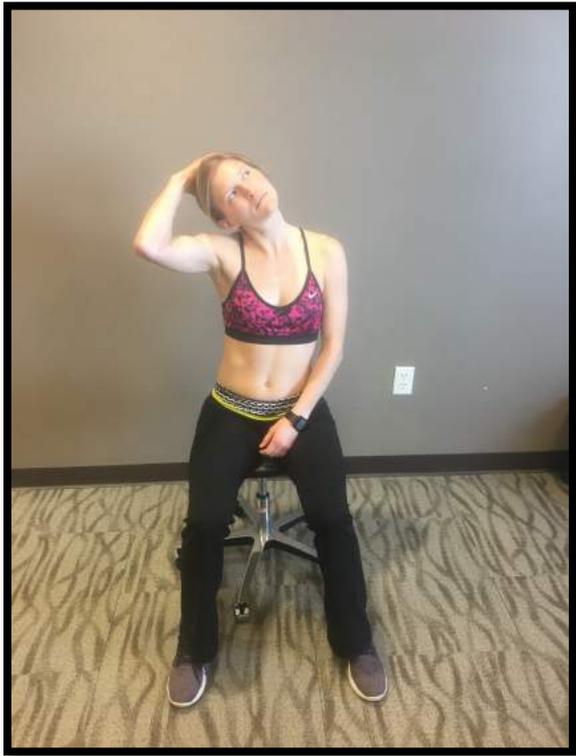


Scapular Squeezes

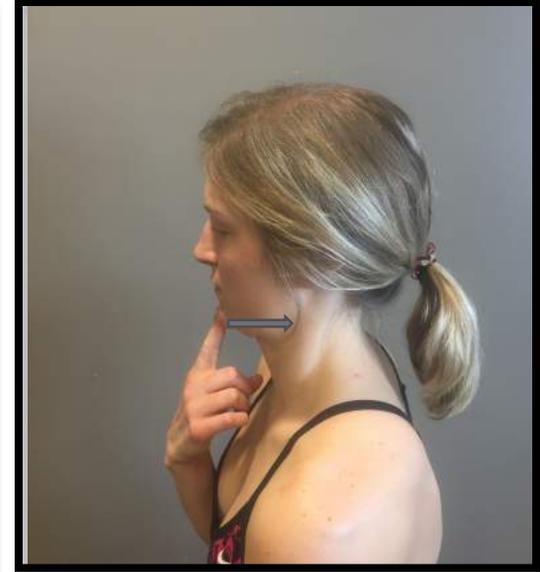


Neck Pain

Upper Trapezius Stretch

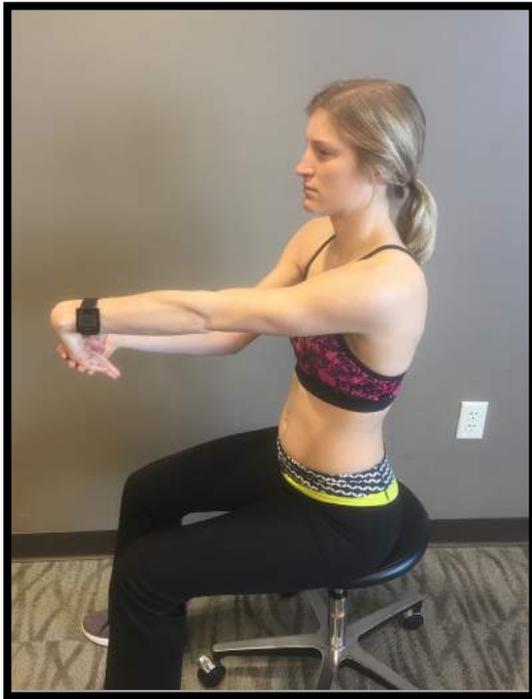


Chin Tucks



Wrist & Elbow Pain

Wrist Extensor Stretch



Wrist Flexor Stretch



What Else Can I Do?



- **Aerobic Exercise!**

- Walking, Biking, Jogging

- Outside in parks, through the neighborhood, at your local gym, FHC PT gym

- Morning "Refresher", Lunch Breaks, Before/After Dinner

- 5 minute warm-up, 10 minute activity



Beneficial for **improved blood flow** throughout body and release of "*feel-good*" chemicals that make us happy & **naturally reduce our pain**

When Should I Utilize These Exercises?

- **As often as you deem is necessary to keep yourself feeling your best.**
- Focus on the exercises that **target your problem area!**
 - Once a day per exercise – especially during the work week.
 - If time allows, complete other exercises on handout for **prevention** of developing problem areas
- How to build them into a busy day?
 - Set an alarm on your phone or watch as a reminder
 - Between patients - complete **ONE** stretch (**Easy! ~1-2 min**)

Take Home Message

- Dentistry profession predisposes clinicians to musculoskeletal injuries
- FHC employees report similar aches/pains as other dental clinicians within research studies
- There are ways to reduce these aches/pains
 - Takes a small amount of time to make a big difference
- Refer to our handout for appropriate exercises and seek other healthcare advice if issues persist.

Remember:

"Fit the **Job to You** and
NOT You to the Job."



References

1. Sakzewski L and Naser-ud-Din S. Work-related musculoskeletal disorders in dentists and orthodontists: A review of the literature. *Work*. 2014;48:37-45. Doi: 10.3233/WOR-131712
2. Hayes M, Smith D and Taylor J. Musculoskeletal disorders in a 3 year longitudinal cohort of dental hygiene students. *JDH*. 2014; 88(1): 36-41.
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4. Khan SA, Chew KY. Effect of working characteristics and taught ergonomics on the prevalence of musculoskeletal disorders amongst dental students. *BMC Musculoskeletal Disord*. 2013;14:118.
5. Shaik A. Dental ergonomics: Basic steps to enhance work efficiency. *Archives of Medicine and Health Sciences*. 2015;3(1):138. doi:10.4103/2321-4848.154966.