



You're in the Game; eSports Medicine

J.A. Smith, DO, FAOASM
Medical Director of Sports Medicine
Mercy Health Toledo



Our Mission

We extend the healing ministry of Jesus by improving the health of our communities with emphasis on people who are poor and under-served.

Our Values

Compassion, Excellence, Human Dignity, Justice, Sacredness of Life, Service

Our Promise

To make lives better—mind, body and spirit

To genuinely enjoy being of service

To make healthcare easier

A close-up photograph of two hands clasped together on a light-colored wooden surface. The hands are positioned in the lower half of the frame, with fingers interlaced. The background is a soft, out-of-focus teal color. The lighting is natural and soft, highlighting the texture of the skin and the wood.

Our Mission

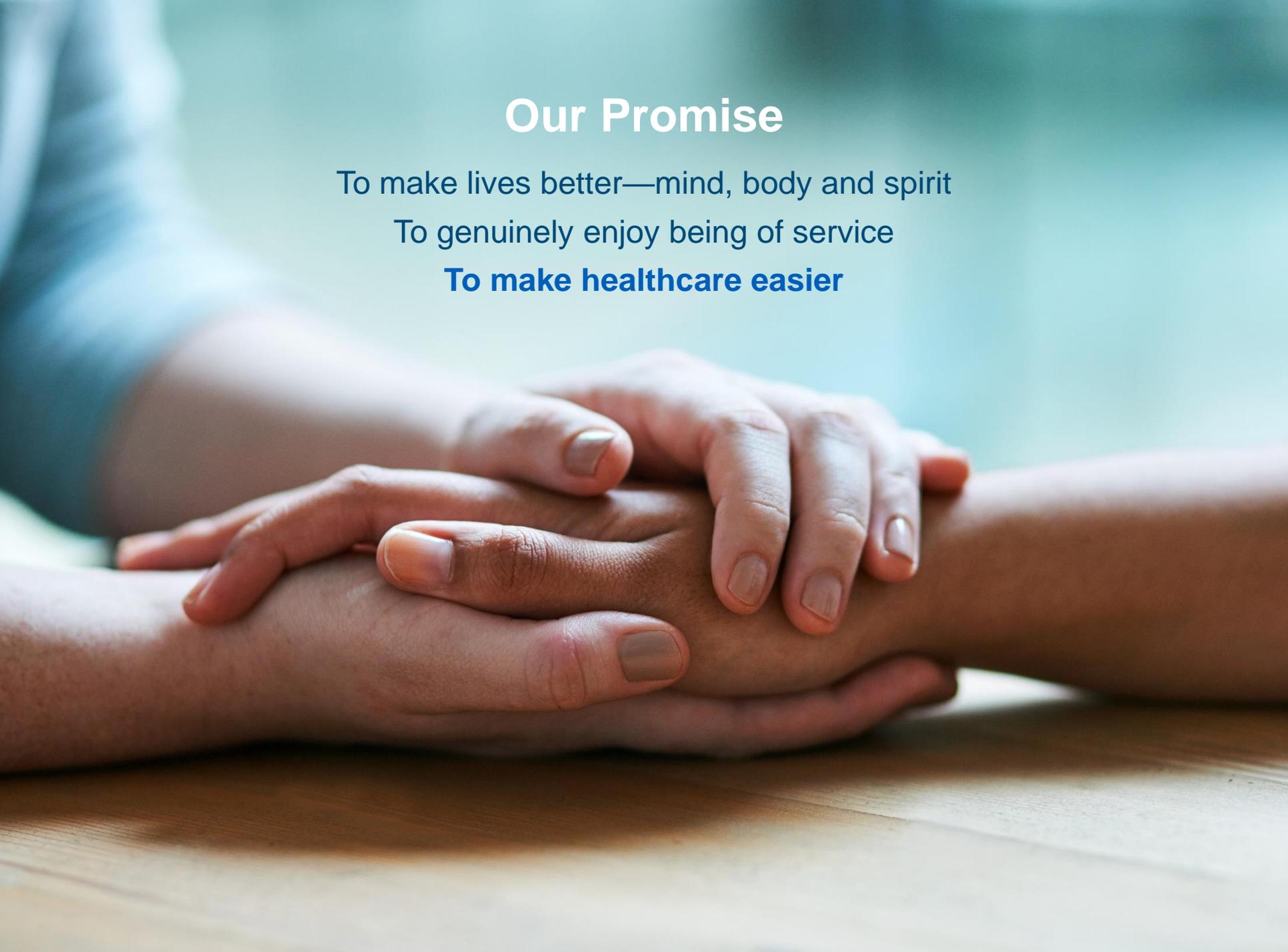
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Our Values

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Excellence
Human Dignity

Justice
Sacredness of Life
Service

A close-up photograph of two hands clasped together on a light-colored wooden surface. The hands are positioned in the lower half of the frame, with fingers interlaced. The background is a soft, out-of-focus teal color. The overall mood is calm and supportive.

Our Promise

To make lives better—mind, body and spirit

To genuinely enjoy being of service

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You're in the Game; eSports Medicine

1. The participant should be able to identify eSport athletes
2. The participant should be able to identify key medical conditions that affect eSport athletes
3. The participant should be able to apply Osteopathic Manipulative techniques to assist the eSport athlete

What are eSports?

- Form of competition using video games
- Common game genres include
 - Real-time Strategy (RTS)
 - StarCraft II
 - Warcraft III
 - First-person Shooter (FPS)
 - Call of Duty
 - Overwatch
 - Fighting and Multiplayer Online Battle Arena (MOBA)
 - Fortnite Battle Royale

History



- Earliest known video game tournament took place October 19, 1972 at Stanford for the game *Space War*
- The winning prize was a year's subscription to *Rolling Stone*



History

- First televised on the show *Starcade* which aired for 133 episodes between 1982-1984
 - Contestants would attempt to beat each other's high scores in arcade games
- Online video game
 - *Netrek* – credited as first online game in 1993 by *Wired* magazine



History

- eSports at the Collegiate Sport Level
 - 2013 Universities started offering varsity athletic scholarships to compete professionally for the school
 - Locally colleges/university with eSports team
 - Ashland University
 - Defiance College
 - Lourdes University
 - Tiffin University
 - Not regulated by the NCAA, but rather National Association of Collegiate eSports
 - Over \$100,000 in available to win for respective schools



History

- Professional Leagues
 - Overwatch League
 - Developed and fully controlled by game publisher Blizzard Entertainment
 - Televised on ESPN
 - 20 Team Worldwide city based league
 - \$50 million new franchise fee
 - NBA 2K League
 - Started in 2018
 - 17 NBA franchise have started their own teams for this league
 - eMLS
 - FIFA soccer game as platform
 - 19/23 MLS teams have a franchise

Olympic Games Recognition

- International Olympic Committee (IOC) in October 2017 acknowledged could be considered as a sporting activity
 - Two difficulties remaining for eSports to be considered an Olympic Sport
 - Consistent lack of a global governing body for further coordination
 - Restriction of games that present violent gameplay
- Both Tokyo 2020 and Paris 2024 are organizing eSports events around the upcoming Summer Olympic games to keep the Olympics relevant to younger generations

Economics

- Estimated 427 million people watch some form of eSports
 - Second only to Soccer
- eSports generate in upwards of 1 billion dollars each year
- Multiple platforms of availability
 - Computer
 - Console
 - Mobile gaming

Training

- Most professional teams train in excess of 50hrs a week on a game as a team
- Players also play on their own in excess of what they do with their teams
- There is no research driven defined training programs for this type of athlete

Performance Enhancing Drugs

- Widespread use/abuse
 - Stimulants
 - Improve concentration and reaction time while preventing fatigue
 - Beta-Blockers or Benzodiazepines
 - Remain calm under pressure
 - Anti-Parkinson's drug i.e. Selegiline
 - Enhances mood and motivation
 - Caffeine
- International e-Sports Federation is signatory of the World Anti-Doping Agency
 - They have not outlawed PEDs in sanctioned competitions

Medical Considerations in eSports

- Physical
- Psycho-social

Esports Games Tiers

Jens Hilgers | BITKRAFT | January 2017



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 *This graph may be used freely including credits for the author

All titles/franchises mentioned have existed for more than a year and show a stable fan and pro-player base as well as frequent tournaments. Further, they fulfil the requirements of at least two categories for the appropriate tier.

	MAUs	Annual Prize Pool	Monthly Hours Watched
Tier 1	> 8 Million	> \$5 Million	> 20 Million
Tier 2	> 1.5 Million	> \$1 Million	> 2 Million
Tier 3	> 500 K	> \$100 K	> 200 K

Sources: - Company and media reports
 - SuperData
 - The Esports Observer

Physical Conditions with e-Sports

- Ocular issues
 - Myopia (Near-sightedness) Has doubled up to 42% in the United States since 1971
 - AAO Study in *Ophthalmology* showed that near work activity including screen time and even traditional books adds to the nearsighted burden; however, spending time outdoors especially in early childhood can actually slow the progression of myopia
 - Eye Strain
 - Looking away from a screen at least 20' every 20 minutes can reduce eye strain
 - Blue light blocking glasses
 - Humidifier in room you look at computer

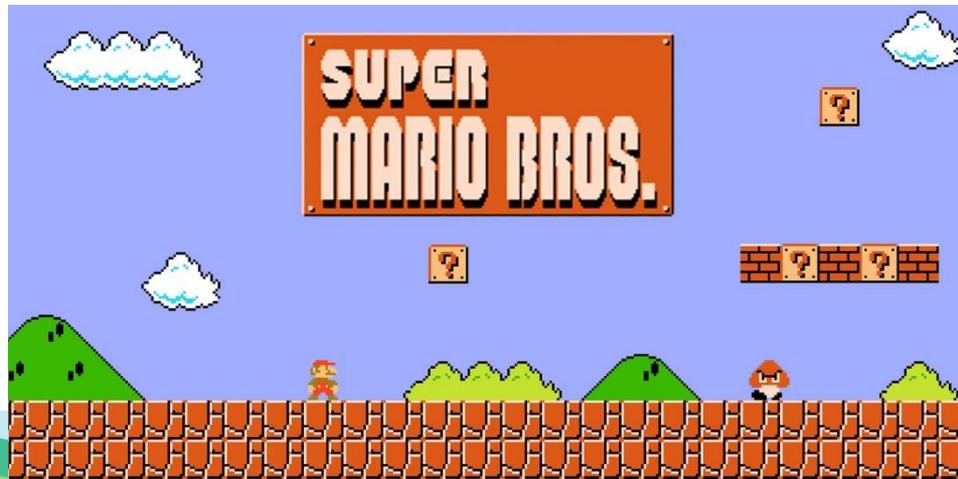
Playstation Thumb

- 2004 case report in *The Lancet*
- Numbness and blister caused by friction between thumb and controller from rapid game play
 - Dermatologist found point-like hemorrhages and onycholysis with hyperkeratosis



Nintendonitis

- Tendon injuries of hand and wrist from playing Nintendo
- Eponym for common orthopedic conditions some of which have Eponyms already
 - De Quervain's Tenosynovitis
 - Extensor carpi ulnaris tendonitis



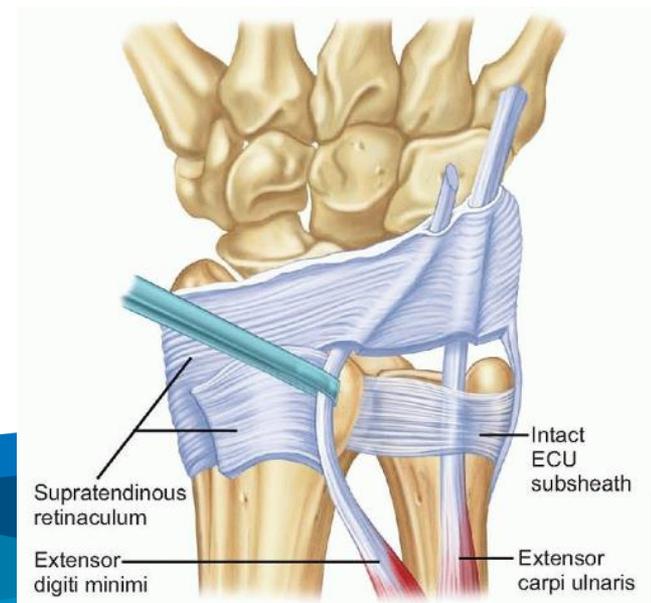
de Quevain's Tenosynovitis

- Tendonitis of first dorsal compartment
 - EPL and APL affected
 - Finklestein Test
 - Treatment includes
 - Rest
 - Thumb Spica bracing
 - Physical/Occupational Therapy
 - Cortisone injections
 - Surgery



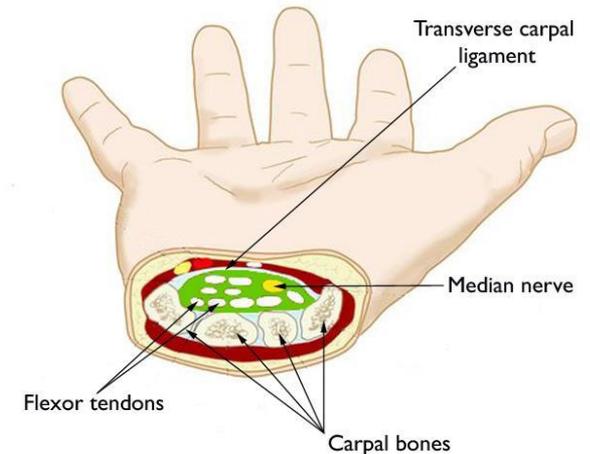
Extensor Carpi Ulnaris Tendinitis

- Similar to de Quervain's this is a tendinitis caused by irritation of a tendon as it cross a styloid of the wrist in this case the ulnar styloid
- Pain over ulnar styloid w wrist extension and ulnar deviation
- Treatment includes
 - Rest
 - Wrist Widget bracing
 - Physical/Occupational Therapy
 - Cortisone injections
 - Surgery



Carpal Tunnel Syndrome

- Compression/Entrapment of median nerve at the level of the wrist in which flexor tendons compress nerve under the transverse carpal ligament
- Physical exam
 - Flexion Compression test
 - Tinel's sign
 - Dyesthesias in thumb, index and middle fingers
- EMG is test of choice
- Treatment includes
 - Rest
 - Cock-up wrist bracing
 - Physical/Occupational Therapy
 - Cortisone injections
 - Surgery





From: **Osteopathic Manipulative Medicine for Carpal Tunnel Syndrome**

J Am Osteopath Assoc. 2012;112(3):127-139. doi:10.7556/jaoa.2012.112.3.127

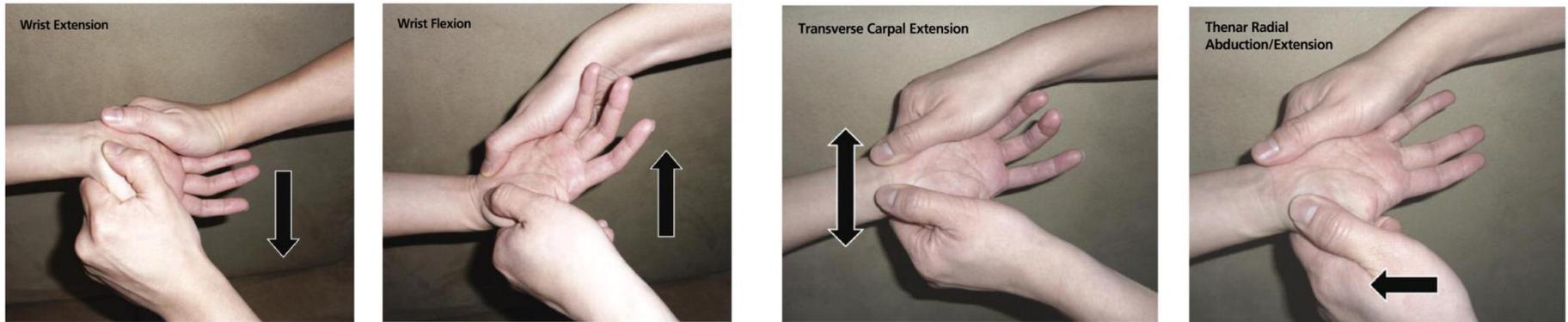


Figure Legend:

The physician induces wrist extension and flexion to evaluate for restriction in passive range of motion, observing the patient for signs of discomfort or pain in these positions. The physician compares the findings in the affected wrist with those in the unaffected wrist to note differences in range of motion.



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J Am Osteopath Assoc. 2012;112(3):127-139. doi:10.7556/jaoa.2012.112.3.127

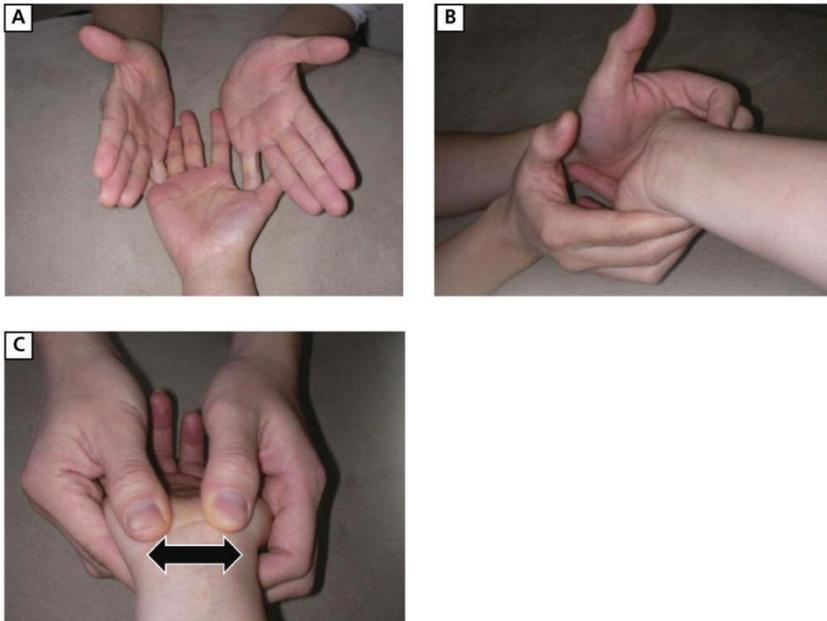


Figure Legend:

Myofascial wrist retinaculum (transverse carpal ligament) release. (A) The physician places his fourth and fifth digits of both hands between the patient's fourth and fifth digits and first and second digits of the palmar surface. (B) Dorsiflexion of the patient's wrist is introduced, and the physician's thumbs overlie the lateral and medial attachments of the wrist flexor retinaculum. (C) Transverse distraction is applied to the retinaculum by using a 3-point or 4-point bending technique, with 2 points ventral and 1 to 2 points dorsal until relaxation of the soft tissue or release of the restriction is attained.

Efficacy of OMT on Carpal Tunnel

- Studies are small and are not of the best quality
- With Moderate Restriction OMT help 16/20 patients with improvements in nerve conduction study within 1-3m
- Sucher et al demonstrated that OMT increased AP and Transverse dimension in carpal canal w subsequent improvements in nerve conduction studies
 - Study limited by sample size, no inclusion or exclusion criteria
 - However studies by Tal-Akabi and Rushton with better methods demonstrated that carpal bone mobilization improved patients' symptoms

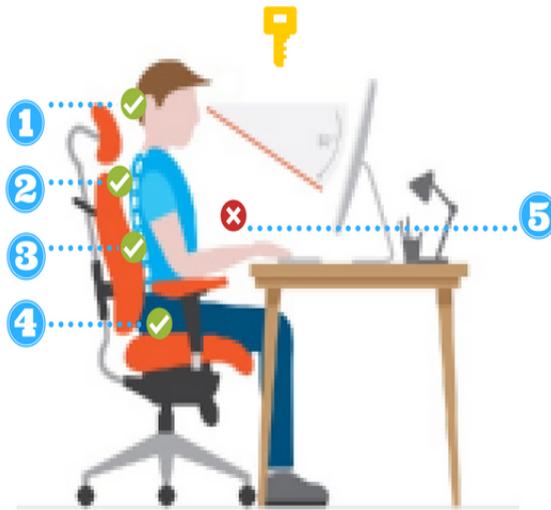
Elbow Pain from Gaming

- Medial/Lateral Epicondylitis
 - Tendonitis of the wrist flexor and extensor muscle bundle
 - Comes from poor posturing during gaming particularly working out and away from your body
 - Best exam is pain w resisted middle finger flexion and extension
 - Counterforce strap test (aka Smith's Test)
 - Treatment
 - Overall treatment is quite frustrating and difficult
 - 4 basics
 - Wrist bracing
 - Strengthening and stretching
 - Nsaids
 - Counter-force strap if appropriate

GAMING POSTURE CHEAT SHEET

A INFOGRAPHIC

5 KEYS TO PERFECT GAMING POSTURE



1 NERF YOUR NECK



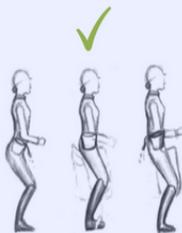
Draw your chin back to keep your neck in a neutral position. Remember: Think like you are making a double chin, NOT tilting your head down

2 SHOULDER SECRETS

Bring your Chest forward before setting your shoulders back and slightly up. The most common faulty position of the shoulder blade is that it is too low, meaning the common advice of setting your shoulders "down and back" can increase your risk of neck pain

3 NEUTRAL GAME: LOW BACK

Slightly Arch your lower back to keep your spine in neutral. Remember your pelvis is like a bowl of water, keep the water from spilling!



GAMING BREAK RULES:

1. After every 50 minutes or 1-2 competitive games (whichever comes first), take a 5-minute break to check posture, walk around and stretch your wrists
2. During any loading times in between games, matches, quickly think "Chest up, Chin tucked, Shoulders back"

4 HAPPY HIPS

Keeps your thigh parallel to the ground - Try to avoid having the knees be higher than your hips and keep your legs straight instead of crossed.

5 SUPPORT YOUR HANDS



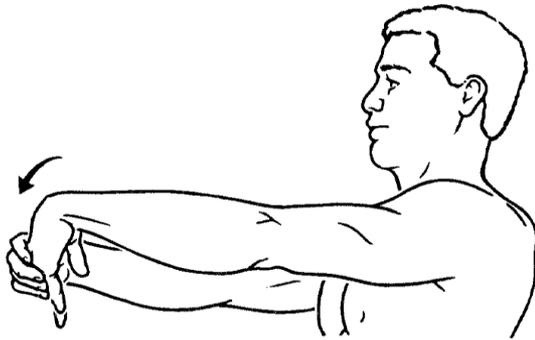
Keep your forearms parallel to the floor and make sure there is not an excessive amount of pressure/weight at any part of your forearm, wrist or hands. Also be sure to keep your wrists in the neutral position.

SECRET BOSS: TIME



Even if we follow these Five Principles of Posture, any position we hold for an extended period of time can be harmful to our health. To beat the secret boss of **TIME**, we can set **gaming break rules** to prevent spending too much time in any position

HAND - 14 Wrist Extensor Stretch



Keeping elbow straight, grasp left hand and slowly bend wrist forward until stretch is felt. Hold 30 seconds. Relax.

Repeat 3 times per set. Do 2 sets per day.

HAND - 20 Forearm Pronation Stretch

With right hand in handshake position, grasp and slowly turn to palm down position until stretch is felt. Hold 30 seconds. Relax.



Repeat 3 times per set.
Do 2 sets per session.
Do 2 sessions per day.

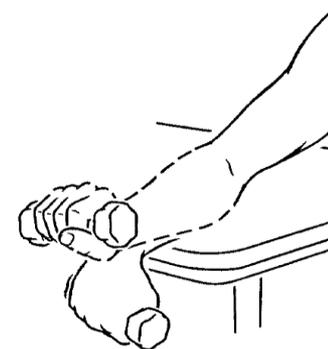
HAND - 48 Forearm Pronation / Supination: Resisted (Sitting)



With right forearm supported, grasp object and gently rotate palm up, then down, as far as possible without pain.

Repeat 20 times per set. Do 2 sets per session.
Do 2 sessions per day.

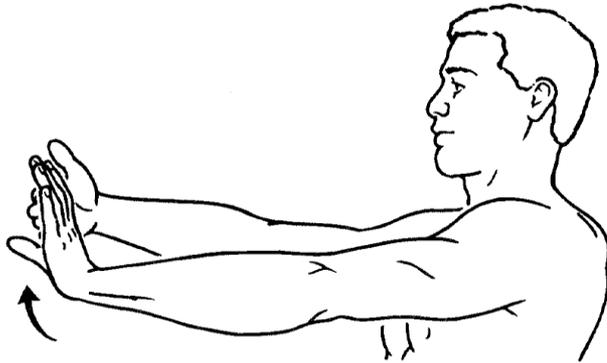
HAND - 64 Wrist Extension: Resisted



With right palm down, light weight in hand, manually bend wrist up. Slowly lower into flexion over a 3" count.

Repeat 20 times per set. Do 2 sets per session.
Do 2 sessions per day.

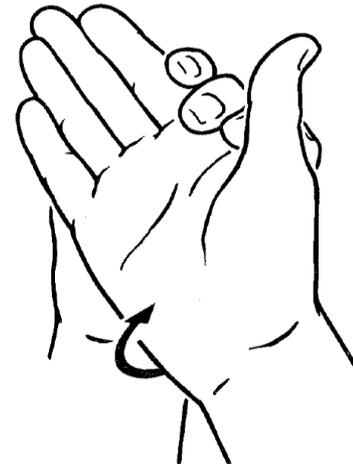
HAND - 13 Wrist Flexor Stretch



Keeping elbow straight, grasp right hand and slowly bend wrist back until stretch is felt. Hold 30 seconds. Relax.

Repeat 3 times per set. Do 2 sets per day.

HAND - 19 Forearm Supination Stretch



With left hand in handshake position, grasp and slowly turn to palm up until stretch is felt. Hold 30 seconds. Relax.

Repeat 3 times per set.
Do 2 sets per day

HAND - 48 Forearm Pronation / Supination: Resisted (Sitting)

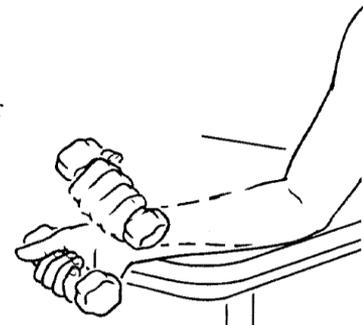


With right forearm supported, grasp object and gently rotate palm up, then down, as far as possible without pain.

Repeat 20 times per set. Do 2 sets per session.
Do 2 sessions per day.

HAND - 63 Eccentric Wrist Flexion: Resisted

With right palm up, light weight in hand, manually bend wrist up. Slowly lower into extension over a 3" count.



Repeat 10 times per set.
Do 2 sets per session.
Do 2 sessions per day.

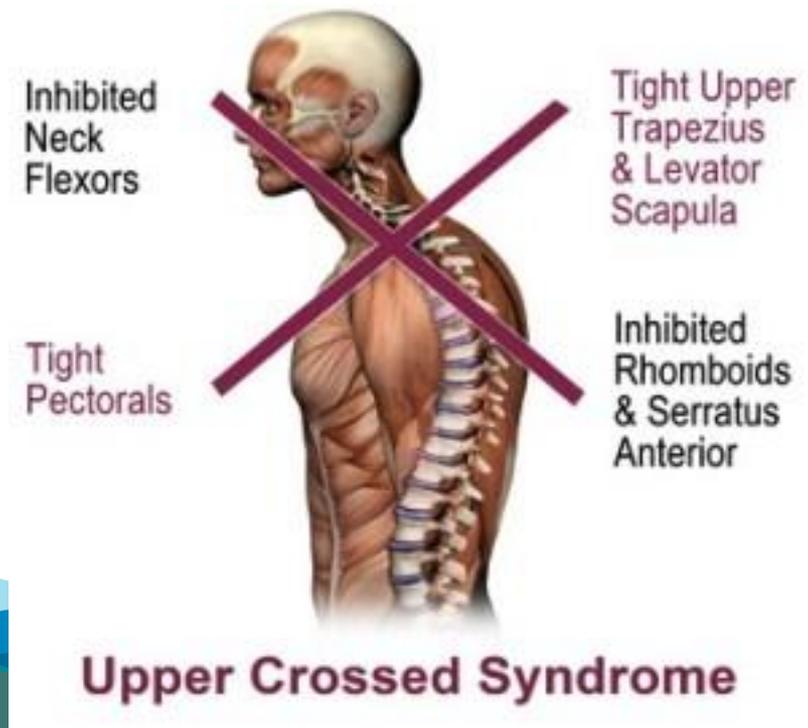
Postural Issues to Gaming

- As we've evolved we're becoming a less upright society
- In office we see a higher predisposition of what has been called "Upper Crossed Syndrome"



Upper Cross Syndrome

- Poor posture leads to a multitude of issues from positioning
- In addition to the issues pictured higher incidence of rotator cuff symptomatology due to surrounding weakness and deconditioning
- PT is best treatment



CERVICAL SPINE - 4 AROM: Neck Extension

Bend head backward.
Hold 5 seconds.



Repeat 10 times per set.
Do 2 sets per session.
Do 2 sessions per day.

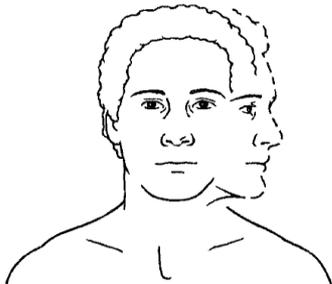
CERVICAL SPINE - 3 AROM: Neck Flexion

Bend head forward.
Hold 5 seconds.



Repeat 10 times per set.
Do 2 sets per session.
Do 2 sessions per day.

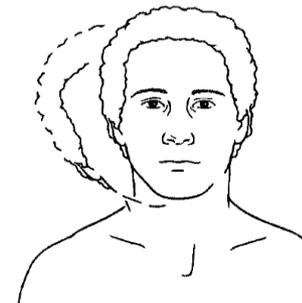
CERVICAL SPINE - 1 AROM: Neck Rotation



Turn head slowly to look over one shoulder, then the other.
Hold each position 5 seconds.

Repeat 10 times per set. Do 2 sets per session.
Do 2 sessions per day.

CERVICAL SPINE - 2 AROM: Lateral Neck Flexion

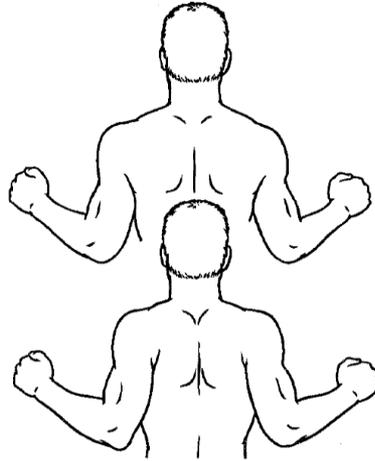


Slowly tilt head toward one shoulder, then the other. Hold
each position 5 seconds.

Repeat 10 times per set. Do 2 sets per session.
Do 2 sessions per day.

SHOULDER - 103 Scapular Retraction:
Elbow Flexion (Standing)

With elbows bent to 90°, pinch shoulder blades together and rotate arms out, keeping elbows bent. Hold for 5 seconds.

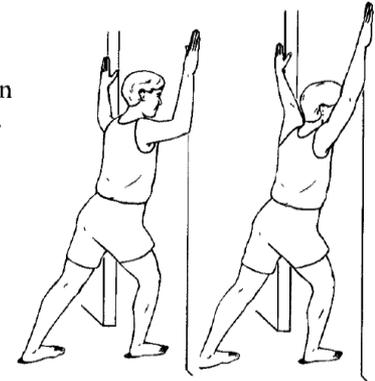


Repeat 20 times per set.

Do 2 sessions per day.

CHEST - 6 Pectorals

With arms forming a T, lean forward until stretch is felt. Hold 30 seconds. Slide arms up to form a V and repeat the stretch.



Repeat 3 times.

Do 2 sessions per day.

CERVICAL SPINE - 23 Flexibility: Upper Trapezius Stretch

Gently grasp left side of head while reaching behind back with other hand. Tilt head away until a gentle stretch is felt. Hold 30 seconds.



Repeat 3 times per set.

Do 2 sets per session.

Do 2 sessions per day.

CERVICAL SPINE - 27 Levator Scapula Stretch

Place left hand on same side shoulder blade. With other hand, gently stretch head down and away. Hold 30 seconds.



Repeat 3 times per set.

Do 2 sessions per day.

Seizures from Video Games

- Concerns started in 1980's
- *The Sun* reported in 1993 a boy choked on his own vomit during a seizure triggered by a video game
 - This triggered all videogame manufacturers to place epilepsy warnings on all video game instruction manuals
- Both the *Lancet* and *Pediatrics* published in 1994 that only those predisposed to seizures have a greater risk
 - Risk reduced by staying 10' away from TV
 - Blue blocker and or sunglasses can do the same

Obesity

- Clear association through multiple studies that there is a link with watching more TV and increased BMI
 - One such study produced data that indicated that boys who spend less than 1.5 hours on the television and playing video games, were 75.4% less likely to be overweight than those who spend more than 1.5 hours
- There is also evidence that playing video games increases food intake regardless of appetite
- No evidence to suggest that active video games show a beneficial outcomes to physical health



Thank you.