ERGONOMICS: THE OPTIMAL VIRTUAL EXPERIENCE
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THE PHYSICAL COST OF POOR ERGONOMICS ON THE SHOULDER, NECK, AND LOW BACK
GOOD ERGONOMICS

- There is no way to reduce the amount of stress on the body to zero while working at a desk, however, when a workspace is properly optimized it minimizes the amount of musculoskeletal stress that is placed on the body.
MUSCULOSKELETAL DISORDERS (MSD)

- In 2018, there were 900,380 DAFW cases in the U.S. private sector with 272,780 (or 30 percent) being MSD cases.*
- Median days away from work in 2018 was 12.

*United States Bureau of Labor Statistics
NOT ALL MSD’S ARE FROM ACCIDENTS

- **The median days away from work in the information sector was 33!**
- **While they have a lower incidence of DAFW at 5210 the injuries typically caused a much longer recovery time.**
POOR ERGONOMICS

• A poorlY optimized workstatIon has the potential to cause a great deal of harm to the body.

• Over the course of this talk we will cover some of the problems caused by poorly optimized workstations concerning the shoulder, neck, and low back.
THE POSTERIOR SHOULDER

• Long periods of keeping your elbows forward is very bad for your shoulder.

• This can cause a tightening of your posterior shoulder which can lead to surgery if it is not addressed.
Splenius Cervisus

The headband
WHAT CAUSES THIS?

Texting is a common contributor to tightness of the lower cervical muscles.
It is often a compensatory curve that develops due to an increased curve in the middle back.
UPPER TRAPEZIUS

- THE COAT HANGER HEADACHE
- (OFTEN MISDIAGNOSED AS A MIGRAINE)
WHAT CAUSES THIS?

Your desk is too high, or your chair is too low. This causes your trapezius to keep your shoulders elevated for extended periods of time.
HOW DO I FIX THIS?

• Your desk is too high….
  • Maybe lower your desk?
• Alternatively you could raise your seat
• If you change your desk or chair height remember to adjust your monitor
MIDDLE AND LOWER TRAPEZIUS, AND RHOMBOID
Having objects placed too far from your torso rounding the shoulders and letting them fall forward and causes the middle trapezius and rhomboids to become overstretched, and the pecs to become tight.
WHAT DOES IT ALL MEAN?

- Trigger points are symptoms of postural deformity.

- Don’t treat symptoms, because they will just come back!
WHAT ABOUT MASSAGES!? 

• Useful for temporary relief, but consider this:

What is the main problem here?

What if that wasn’t why you were called out?
SO WHY AM I DIFFERENT?

**Walking Doc Chiropractic**
- Trained in evaluating static workstations
- Adjusts workstations to fit specific employees needs
- Can perform on-site physicals and provide diagnosis
- Can provide rehabilitative exercises for employees
- Can often provide on-site treatment for employees
- Can identify injuries prior to causing missed days of work

**Ergonomist**
- Trained in evaluating static workstations
- Usually fits employees into templated setups
- Not trained in any physical examination and not licensed to diagnose
- Can not provide rehabilitative advice to employees
- Is unable to identify specific injuries and must refer employee to healthcare professional
- Not trained to diagnose or identify any employee complaints
DO N’T BE LIKE THIS…
Take a comprehensive approach to your employee’s health
IEEE CNSV-
"ERGONOMICS: THE OPTIMAL VIRTUAL EXPERIENCE"

Pallab Chatterjee- Roadway Intelligence

(This presentation was a video, without accompanying slides)
ERGONOMICS: THE OPTIMAL VIRTUAL EXPERIENCE

DR. ARIJIT GHOSH
LUMEN TECHNOLOGIES

5.19.21
Deliver video content
Performance, security, scale
HOW ONLINE VIDEO WORKS

Diagram:
- Container
- Meta data
- Audio
- Video Codec
- Bit rate
DIFFERENT DEVICES

Different containers

Meta data

Meta data
DIFFERENT QUALITIES

Different containers

Meta data

Meta data
DIFFERENT NETWORKS

Different bit rates
DIFFERENT GEOGRAPHIES
• Security

• Availability

• Closed captioning

...
Content Delivery Network (CDN)
WHAT IS A CDN

• A global overlay network of reverse proxies
  • CDN Edges

• Caches content close to the end user

• Provides origin for content storage

• Prepares content in correct format
HIGH LEVEL CDN ARCHITECTURE
CONTENT PREPARATION

**CONTENT INGEST**
To the CDN platform as mp4

**ENCODE**
Different bit rates

**STORAGE**
VOD assets

**PACKAGE**
Different formats
User looks up: video.you.com
Hosting provider returns a CNAME to CDN
DNS lookup request goes to CDN
CDN dynamically determines “closest” edge to user
User makes http request to edge

You have to make this change

If content in cache, deliver to end user
Otherwise retrieve from origin, deliver and cache
ADAPTIVE BIT RATE

Master file
(.m3u8 or .mpd)

Representation index file
(.m3u8 or .mpd)

Different encodes

Video segments
IN SUMMARY

VIDEO DELIVERY IS HARD
Wide variety of players, devices, networks

VIDEO EXPERIENCE MATTERS
Especially in these times

LEVERAGE A CDN
So that you can focus on what you do best