



# VIRTUAL REALITY AND PAIN MANAGEMENT

Presented by  
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# ABOUT THE AGING AND INTEGRATIVE PAIN ASSESSMENT AND MANAGEMENT INITIATIVE (AI-PAMI)

- ❖ AI-PAMI is a comprehensive project addressing non-opioid pain management in adults ages 50 and older living in Northeast Florida. The overall goal of AI-PAMI is the advancement of innovative pain education and patient care through the development of provider and patient workshops focused on integrative pain management.
- ❖ Funding provided by Florida Blue Foundation and the Florida Medical Malpractice Joint Underwriting Association.
- ❖ Visit [pami.emergency.med.jax.ufl.edu](http://pami.emergency.med.jax.ufl.edu) to learn more.
- ❖ Contact PAMI at [pami@jax.ufl.edu](mailto:pami@jax.ufl.edu) or 904-244-4986



# PRESENTER INFORMATION



## ❖ Education:

- ❖ Bachelors- Florida State University
- ❖ Masters- AOMA Graduate School of Integrative Medicine
- ❖ Currently completing my Doctorate studies in Acupuncture and Integrative Health.

## ❖ Work Experience:

- ❖ Remote Emergency Medical Responder (EMR)
- ❖ Completed internship at the Central Texas VA Hospital
- ❖ Licensed Acupuncturist
- ❖ Private Practice- Pain/ Stress Management, Sports Medicine
- ❖ Joined the PAMI group as the Pain Coach and Educator here at UF Health Jacksonville, Department of Emergency Medicine.

# WHAT IS VIRTUAL REALITY?

- ❖ Virtual reality means creating immersive, computer-generated environments that are so convincing users will react the same way they would in real life.
- ❖ Virtual reality is used for much more than games. It has been used for training simulations by the military and medical professionals alike.



# WHAT IS A VIRTUAL REALITY HEAD SET?

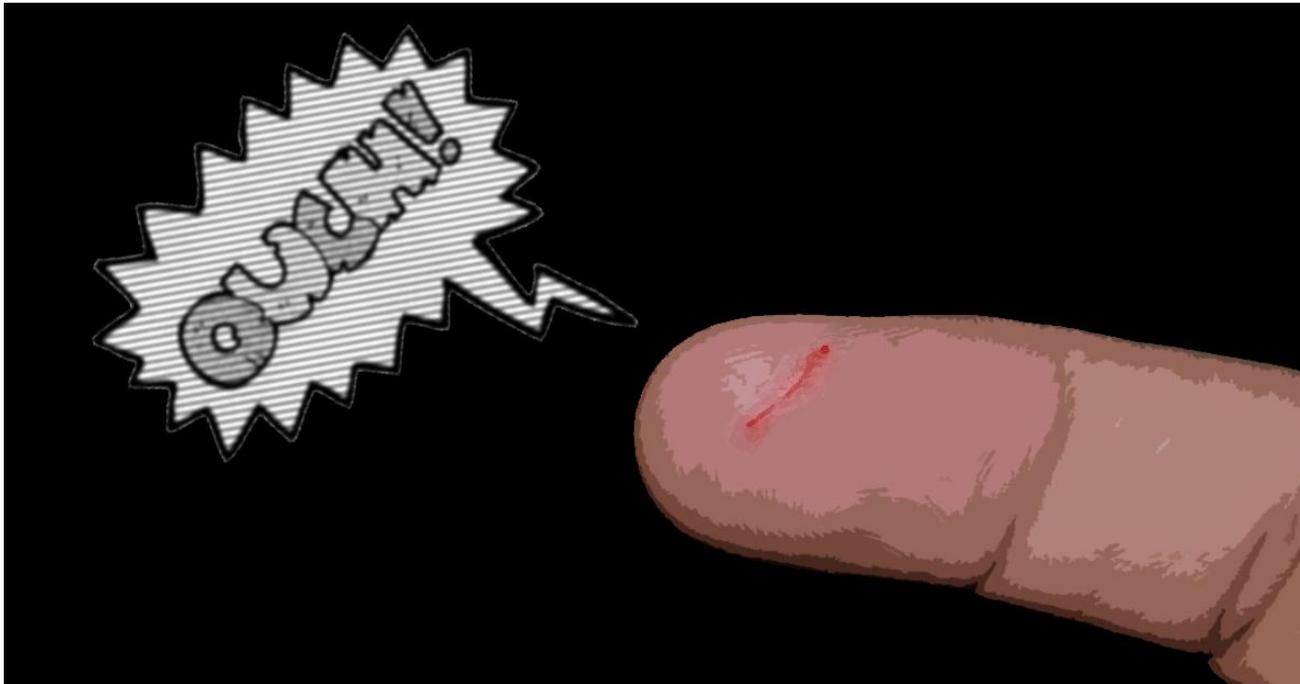
- ❖ A virtual reality head set can range from low-tech, inexpensive options like Google Cardboard to high-tech options for a few hundred dollars, such as the Oculus.
- ❖ The head sets are wearable like goggles or glasses and allow the user to be immersed in the video experience. Some are standalone, others require a smart phone or video game console to pair with.
- ❖ Once you have a VR head set and any related components, the next step is to locate applications in the app store (Apple app store or Google Play) for your device. Try searching for VR in your app store to locate free or paid options to try out.

# A BRIEF INTRODUCTION TO PAIN NEUROSCIENCE



- ❖ What we know: Pain is interpreted, processed, and produced by the brain. Pain is no longer understood to be solely a marker of tissue damage.
- ❖ Pain is the brain's interpretation of “danger signals”.
- ❖ The brain will enlist the help of different “departments”:
  - Memories
  - Current emotional state
  - Thoughts/ beliefs about pain

# EXAMPLES



- ❖ Minimal damage with severe pain:
  - PAPER CUT (they hurt worse at work)
- ❖ Severe tissue damage with minimal pain:
  - Motor Vehicle Accidents/ Sports injuries (pain doesn't start until after the game or the next day)
- ❖ Pain in a limb that is no longer there:
  - PHANTOM LIMB PAIN

# WHAT DOES THIS HAVE TO DO WITH VR?

- ❖ Our thoughts, feelings, and emotional states regarding our environment have a direct affect on our sense of danger and safety.
- ❖ If we feel that we are in danger our brain will produce the same hormones as if we were in a real life or death situation.
- ❖ It does not take the chance the danger isn't real!
- ❖ We can utilize VR to reduce danger signals, which will decrease the “protective response” allowing us to naturally return to a state of homeostasis/balance.
- ❖ This reduces production of stress hormones, lowers emotional stress, reduces mental agitation, and decreases pain sensitivity.

# LET'S PLAY A LITTLE GAME

How do these phrases make you feel?

**“BONE ON BONE”**

**“WEAR AND TEAR”**

**“SLIPPED DISK”**

**“WORST \_\_\_\_\_ I'VE EVER SEEN”**

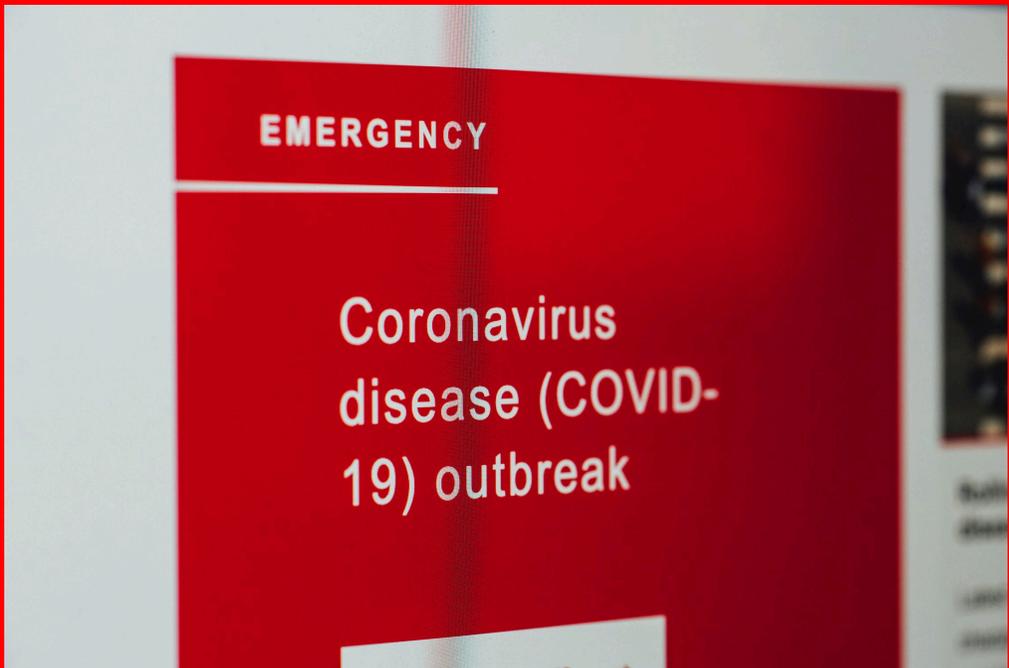
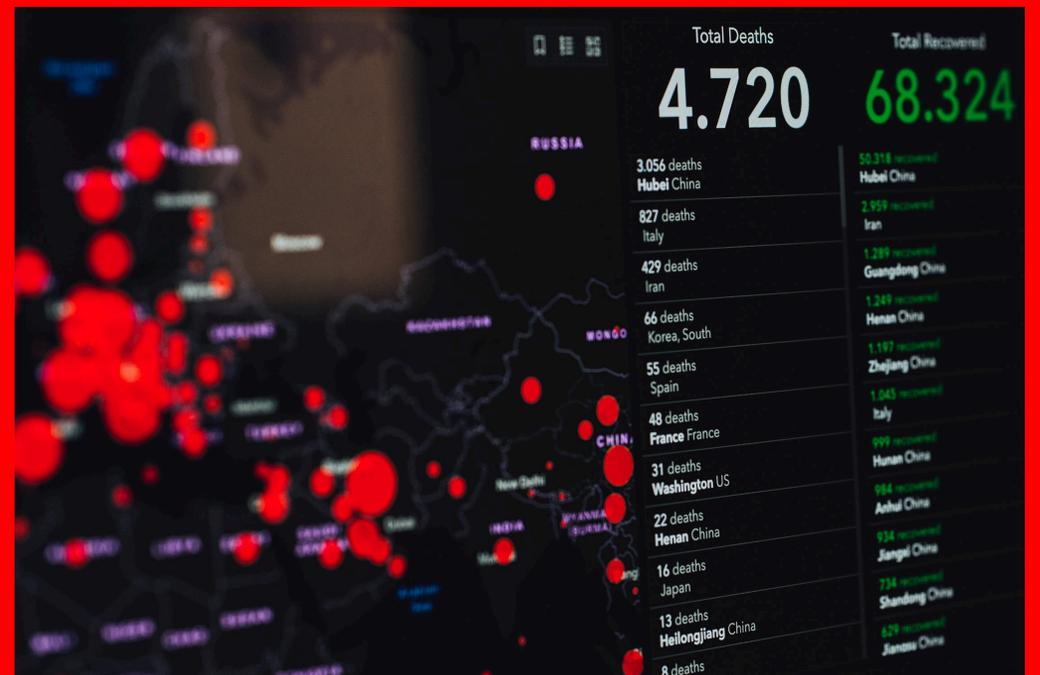
How do they sound in your head?

Did they produce any Emotions, Thoughts, or Memories?

# LETS PLAY A GAME CONTINUED...

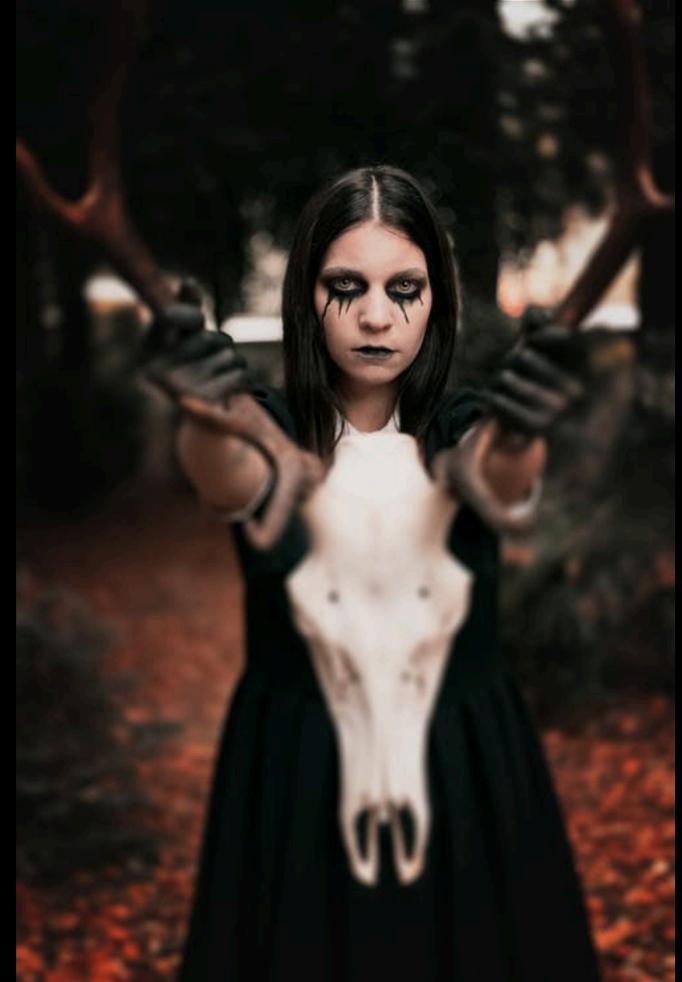
WARNING SOME OF THE FOLLOWING IMAGES MAY BE DISTURBING FOR SOME VIEWERS.

- Pay attention to the emotions that these images conjure in your mind
- Pay attention to physiological responses like increased heart rate, jaw clenching, tension (physical and mental), etc.
- Pay attention to memories or thoughts that bubble up with these images (possibly past traumas, accidents, times that you did not feel safe...)





**ALMOST DONE...**



# HOW IS EVERYONE FEELING?

- ❖ What were some of the emotions, memories, and thoughts that were felt while viewing those images?
- ❖ Where the emotions/feelings mostly positive or mostly negative?
- ❖ How did your body feel while viewing the images?
- ❖ Increased heart rate, clammy hands, clenched jaw, neck tightness, stomach upset?
- ❖ Did you feel relaxed or on edge?
- ❖ Is anyone still feeling upset, unsafe, or in danger?

# WHAT DID WE JUST LEARN?

- ❖ None of us were in any real danger but our brains did not make that differentiation.
- ❖ Thinking about danger and/or being exposed to learned and cultural fears elicits physiological changes.
- ❖ We felt the danger being expressed in our body, mind, and emotions. Even though we knew we were not in any real danger!
- ❖ What do you think happens in our bodies when we are “exposed” to these “perceived dangers” everyday?

# ITS ALL ABOUT BALANCE!

- Just like how certain colors (red, yellow) can trigger “danger signals” then other colors (blue, green) can trigger “safety signals”.
- The same can be said for emotions, feelings, and thoughts. The more positive the emotion, feeling, or thought- the stronger its safety signals are and the greater the impact on your brain chemistry.
- How do these phrases make you feel?

**“ROAD TO RECOVERY”**

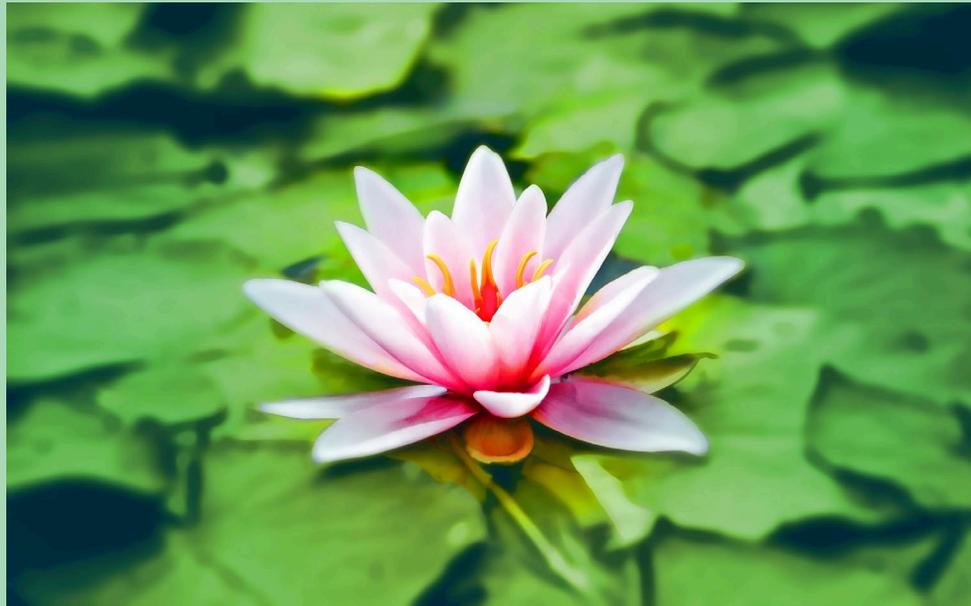
**“SAFE AND SOUND”**

**“REST AND RELAXATION”**

**“NORMAL BONE AGING”**



# TIME FOR A VACATION!!!





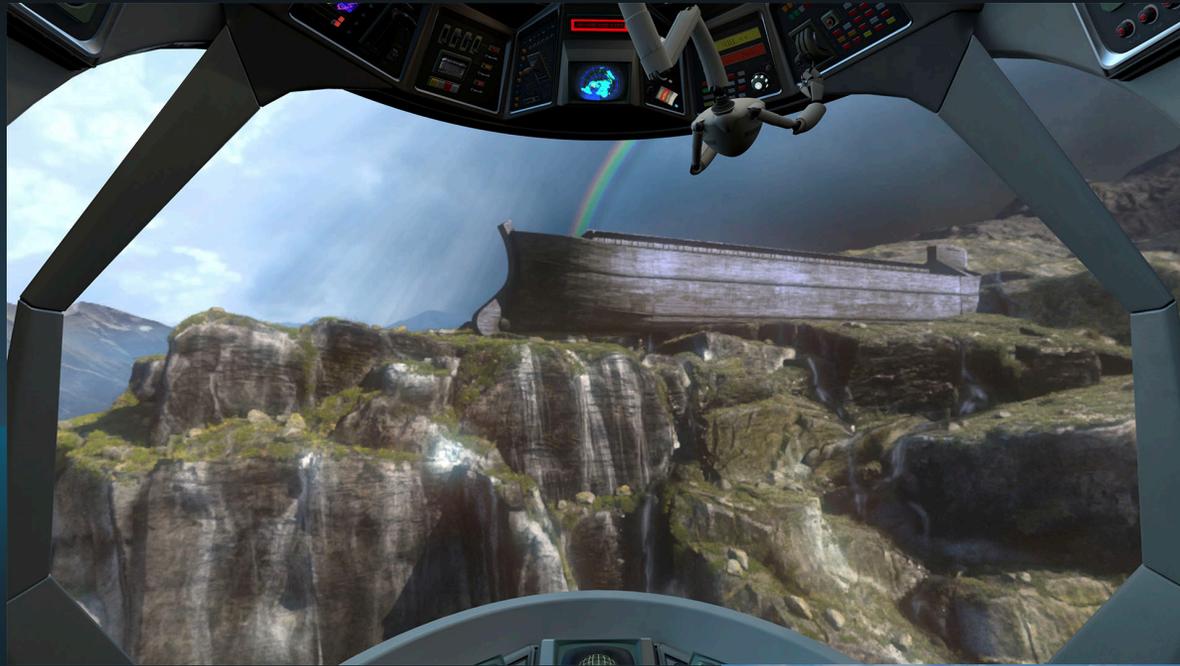
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# RECAP

- ❖ The more danger signals that are being transported to the brain (physical, mental, emotional) the more apt the brain is to become hyper-vigilante of these signals.
- ❖ This means that only a small amount of additional stimulation is needed to trigger the brain to produce a full blown “protective” response aka PAIN
- ❖ The more “safety signals” that are transported to the brain the lower the amount of “danger signals” and the lower the need for “protection”.
- ❖ VR works in the same way as the images we have seen, actually it works even better!

# BREAKING THE CYCLE WITH VR



DREAMSCAPE

# VR: A FULLY IMMERSIVE REALITY!

- ❖ Virtual Reality not only stimulates you visually but also accesses other parts of the brain!
- ❖ VR has been shown to release endorphins, neurotransmitters, and endogenous opioids when coupled with belly breathing and mindfulness meditation!
- ❖ It is the ultimate distraction tool and can be used to increase “safety” signals to your brain!
- ❖ By increasing the amount of positive stimulus to the brain we lessen its ability to interpret chronic pain stimulus. Think of it like having a song stuck in your head (the “pain” song that never ends) and playing a new song to forget the old one.

# WHAT THE RESEARCH SAYS: CAN IT HELP WITH PAIN MANAGEMENT?

- ❖ Virtual reality sessions may reduce a patient's perceived pain as demonstrated by studies with inpatient hospitalized patients.
- ❖ Patients immersed in virtual reality have displayed a higher pain tolerance, which could reduce the dosage and frequency of pain medication required for relief.
- ❖ Reported pain has been reduced in instances of both acute and chronic pain.

# WHAT THE RESEARCH SAYS: CAN IT HELP WITH STRESS AND ANXIETY?

- ❖ Virtual reality used as a distraction tool may reduce the time it takes a provider to complete simple anxiety-producing procedures like IV placement and injections.
- ❖ Time spent thinking about pain was reduced in certain studies, which may be promising for anxiety and a reduction in repetitive thoughts and fixation.
- ❖ Mindfulness and meditation programs are being specially designed to help users receive the benefits of such techniques without some of the barriers to access.

# VR SAFETY

- ❖ If you have a history of motion sickness or vertigo, test out short time frames before watching a full video.
- ❖ Ensure the area you are moving around in is free of trip hazards and other objects you might knock over.
- ❖ Try sitting in a chair during your first few sessions before you give standing a try.
- ❖ Select VR videos that make you feel comfortable and not scenes that you would be uncomfortable or afraid of in real life. I.e. Don't swim with sharks if it scares you in real life!

# Q & A

