



MANAGING LOW BACK PAIN

RECONDITIONING OF THE LUMBAR SPINE IN HOCKEY

SCOTT LIVINGSTON



RECONDITIONINGHQ.COM



THE BACK WAS NEVER THE STORY

IT WAS ALWAYS THE SUBJECT MATTER

Permission to share case given by Gabe Vilardi

TODAY'S OBJECTIVES

- UNDERSTAND THE DEMANDS PLACED ON THE SPINE IN HOCKEY
- RECOGNIZE WHAT'S MISSING
- WORK WITHIN A TEAM TO RESOLVE THE REAL PROBLEM





UNDERSTANDING
THE DEMANDS ON
THE HOCKEY
SPINE



ICE HOCKEY DEMANDS

- THREE DISTINCT POSITIONS
 - FORWARDS
 - DEFENSEMEN
 - GOALIES



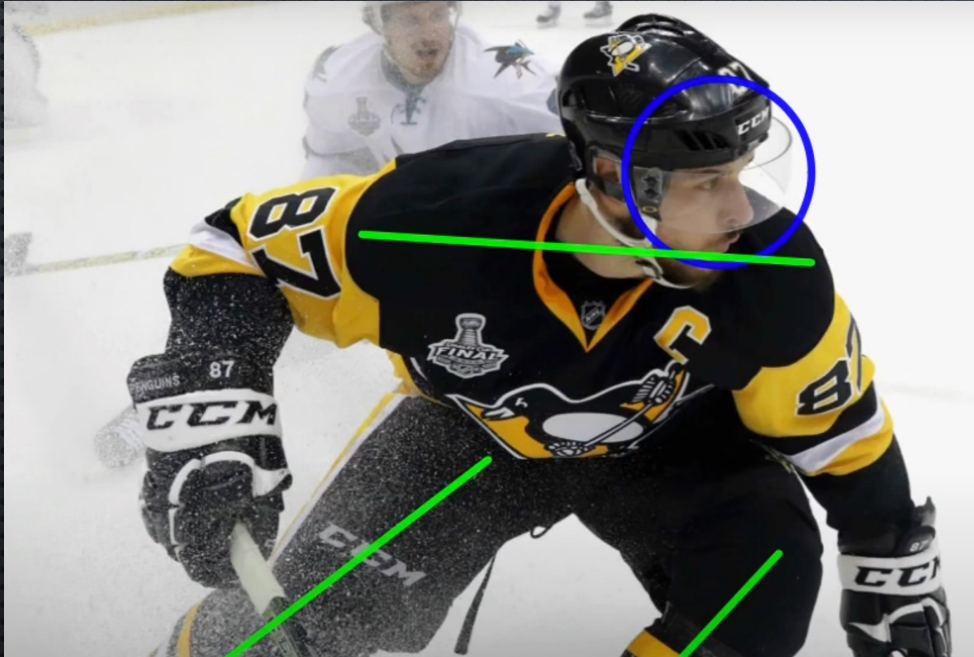




CHANGE YOUR PERSPECTIVE



BOUNDARIES OF POSITION





NON-NEGOTIABLES (CONSTRAINTS)

- SKATES ANKLES/FEET
- BLADE CONTACT – EDGING
- STICK/PUCK
- BOARDS/NETS/OTHER PLAYERS
- POSTURES – VARIABLE/QUICK TRANSITION
- STRIDE MECHANICS
- VISUAL FIELD - DYNAMIC AND HORIZONTAL



NEEDS ANALYSIS – CAPABILITY (HOW)

- AVAILABLE ROM AT ANKLE/KNEE/HIP/SPINE
- SO CALLED TRIPLE EXTENSION/TRIPLE FLEXION
- TRUNK/PELVIS DISSOCIATION
- PELVIS/TRUNK DISSOCIATION
- FEMUR/PELVIS DISSOCIATION
- TRUNK/PELVIS ASSOCIATION
- LOWER LIMB DISSOCIATION
- FINE AND GROSS MOTOR CONTROL
- QUALITY GAIT MECHANICS



CAPACITY (HOW MUCH)

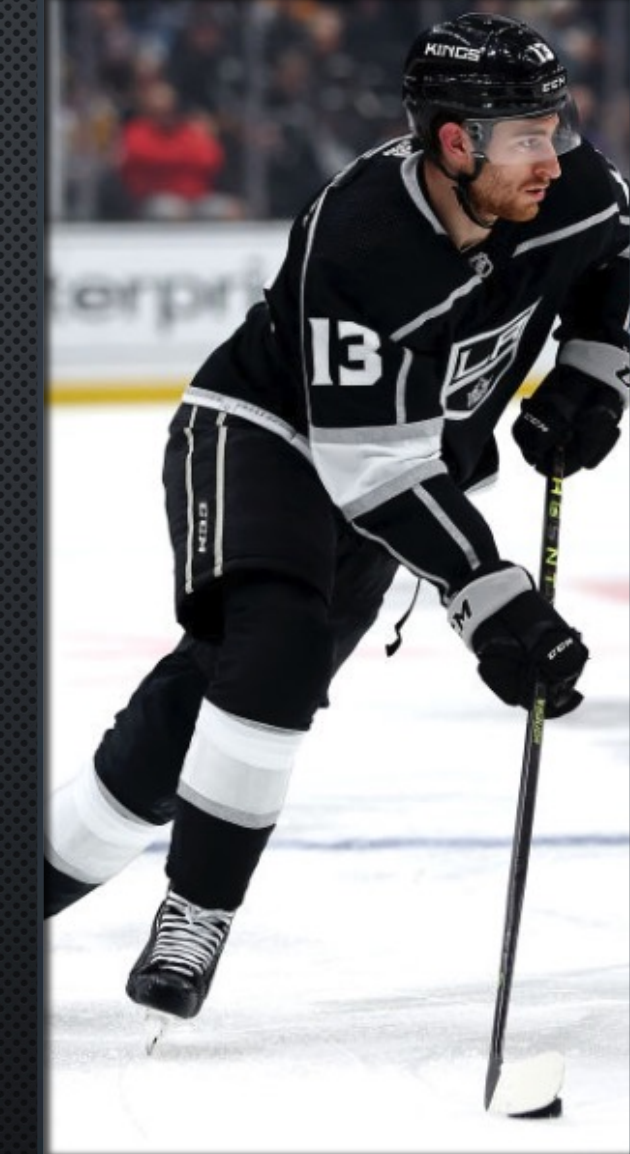
- PREDOMINANT ENERGY SYSTEM DEMAND IS ANAEROBIC LACTIC
- SHIFTS 40-80 SEC – 12-16 PER GAME
- ANAEROBIC POWER/CAPACITY
- SPEED/QUICKNESS/AGILITY
- VARIOUS FORMS OF STRENGTH
- PEAK FORCE/RFD/ABSOLUTE FORCE
- ECCENTRIC/CONCENTRIC/ISOMETRIC
- BALANCE
- COORDINATION
- MOBILITY WITH SPEED AND REPEATABILITY





PLAYER SIGNATURE CONSIDERATIONS

- FORWARD
 - STRENGTH ON RUSH – OPEN ICE
 - STRENGTH DOWN LOW – JITTER BUG
 - STRENGTH PHYSICALLY – BATTLING
 - TWO-WAY PLAYER?
 - PK/PP
- DEFENSEMAN
 - STAY AT HOME
 - PHYSICAL
 - PLAYMAKER
 - JOIN THE RUSH
 - PK/PP



POSTURES/SHAPES/PATTERNS

- FORWARD SKATING STANCE
- BACKWARDS SKATING STANCE
- PUCK PROTECTION STANCE
- CREASE PROTECTION STANCE
- FORWARD - BACKWARD – CROSSOVER – WITH/WITHOUT PUCK
- TRANSITIONAL PATTERNS
- PASSING/SHOOTING



THE GOALIE
AN ATHLETIC
ROBOT



NEEDS ANALYSIS

- REPETITIVE AND DEFINED POSTURES, SHAPES AND POSITIONS
- ACTION/REACTION/AGILITY
- VISUAL FIELD – PUCK TRACKING
- GOALIE READY STANCE
- BUTTERFLY POSITION
- LEG RECOVERY
- PUSHES STANDING AND IN BUTTERFLY
- PUCK HANDLING AND PASSING
- OPEN ICE SKATING



CHANGE YOUR PERSPECTIVE



A photograph of a hockey goalie in a white LA Kings uniform, crouching in front of the goal. The goalie is wearing a white and black helmet with a cage, and white leg pads. The LA Kings logo is visible on the chest. The background shows a blurred crowd of spectators.

CAPABILITY

- TRUNK/LOWER QUADRANT DISSOCIATION
- TRUNK ON PELVIS ASSOCIATION
- PELVIS ON FEMUR DISSOCIATION IN BUTTERFLY AND RECOVERY
- FEMUR ON PELVIS DISSOCIATION IN BUTTERFLY AND RECOVERY
- SPINAL FLEXION/SIDE BENDING/ROTATION
- HIP MOBILITY.....DID I SAY HIP MOBILITY!
- CERVICAL ROTATION IN FORWARD AND REVERSE
- STATIC AND DYNAMIC/REACTIVE ARM POSITIONS AND MOVEMENTS



CAPACITY

- FOUNDATIONAL AEROBIC CAPACITY – ONLY POSITION ON THE ICE FOR THE ENTIRE GAME
- ANAEROBIC POWER AND CAPACITY – CHANGE OF POSITION UP TO DOWN, PUSHING
- ECCENTRIC DEMANDS ARE SIGNIFICANT – BREAKING AND DROPPING
- POWER - PUSH MOVEMENTS
- QUICKNESS
- HIGHLY REACTIVE - AGILITY

POSTURES - SHAPES AND PATTERNS

- SHAPES
 - BASE STANCE
 - BUTTERFLY
 - POST POSITION
- PATTERNS
 - STANDING PUSHES
 - RECOVERY PUSHES
 - BUTTERFLY PUSHES
 - PAD REACHES
 - BLOCKER/TRAPPER/STICK REACHES



NON-NEGOTIABLES

- VISUAL FIELD
- EDGE POSITION
- BUTTERFLY POSITION
- GLOVE POSITION
- HOLDING A STICK
- PADS
- BASE STANCE

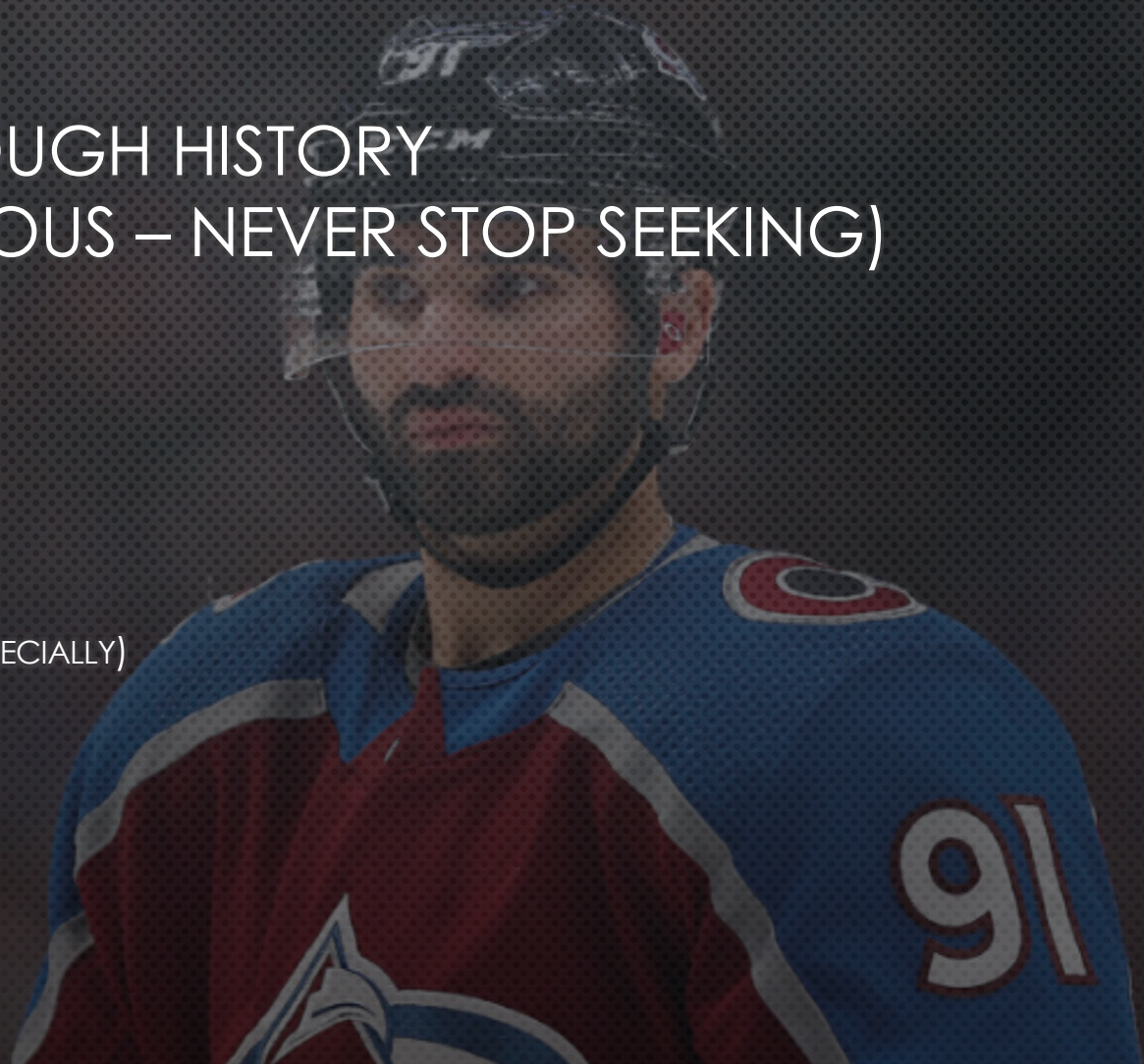




BEGIN WITH THE
PERSON.....
AND END WITH
THE PROBLEM

TAKE A THOROUGH HISTORY (REMAIN CURIOUS – NEVER STOP SEEKING)

- IT ALL MATTERS
 - SURGERIES
 - CONCUSSIONS
 - FRACTURES
 - STRAINS (REPETITIVE ESPECIALLY)
 - ILLNESS
 - CAR ACCIDENTS





HIS-STORY

- 19- YEAR-OLD CENTREMAN FROM KINGSTON, ON
- HX OF BACK PAIN IN JUNIOR HOCKEY, LOST FIRST HALF OF DRAFT SEASON DUE TO BACK ISSUES
- NHL TRAINING CAMP, INJURED BACK ONCE AGAIN, TEAM WORKED TO RETURN HIM TO PLAY, CLEARED TO RETURN 11/20/17 TO ONTARIO RIAN, WENT TO TEAM CANADA CAMP CHRISTMAS 2017 HAD TO PULL OUT
- WENT HOME, CAME TO LA TO TRAIN MAY 2018, HURT HIS BACK IN THE GYM JULY 2018 – CLEARED TO PLAY 11/18 BUT COULD NOT RETURN FULLY
- WENT HOME TO KINGSTON UNTIL AUGUST 2019 – CONSULT WITH ME MTL
- CHRONIC PAIN AND TINGLING RIGHT LOWER BACK AND RADIATES DOWN RIGHT LEG, MANAGED WITH SIGNIFICANT PAIN MEDS
- MRI – SHOWS DISC ISSUES AT T11-12, L1-2, L2-3, L3-4, L4-5
- NOTHING SEEMS TO RELIEVE THE NEUROLOGICAL SYMPTOMS

BACKGROUND NOISE

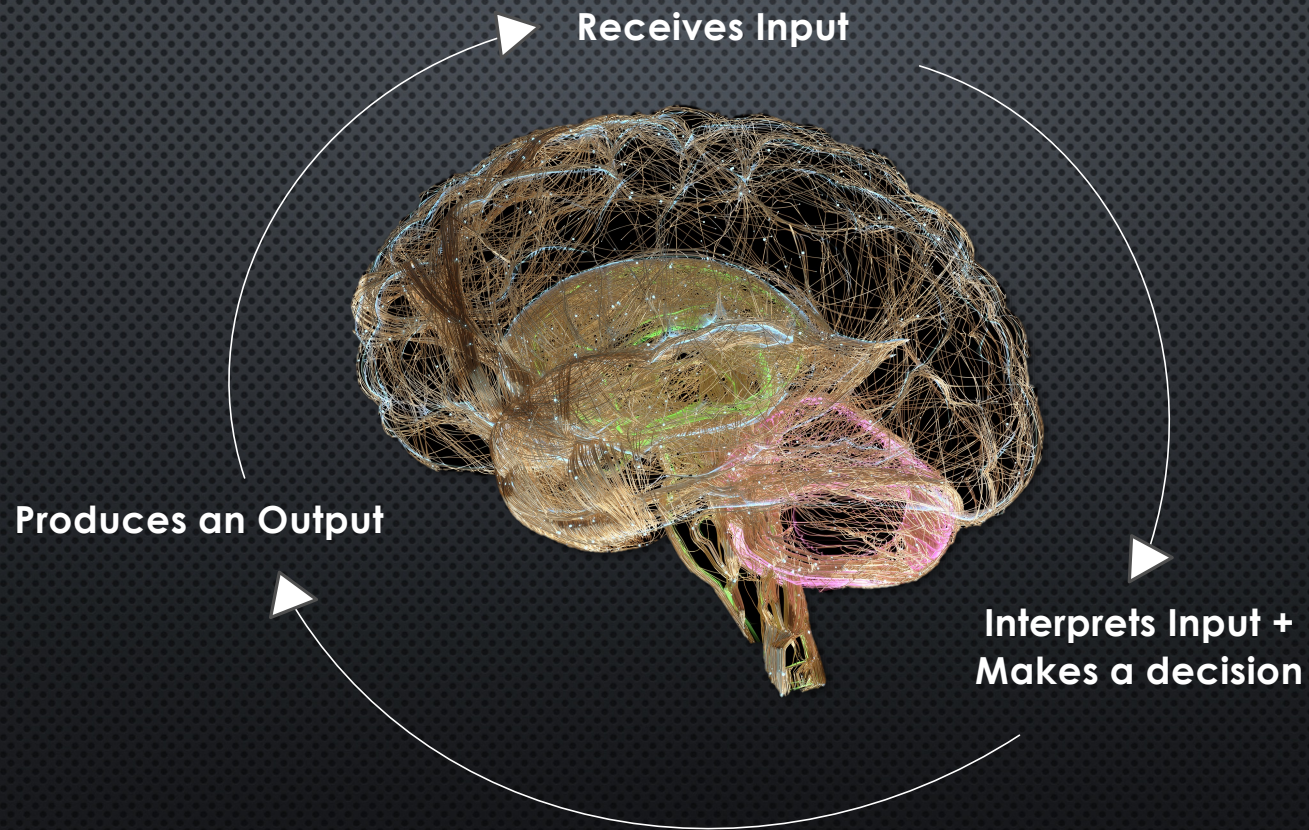
- ACUTE APPENDICITIS OPERATION AT 16
- BACK ISSUES BEGIN AT 17
- 3 RTP FAILURES
- PRIMARY EXERCISE FOCUS – CORE CONTROL/STABILITY
- CAREER **THREATENING** INJURY
- SIGNIFICANT PAIN MEDICATIONS
- HAS LOST HOPE?





THE BRAIN
RUNS THE
SHOW

HOW THE NERVOUS SYSTEM WORKS - FEEDBACK CYCLE

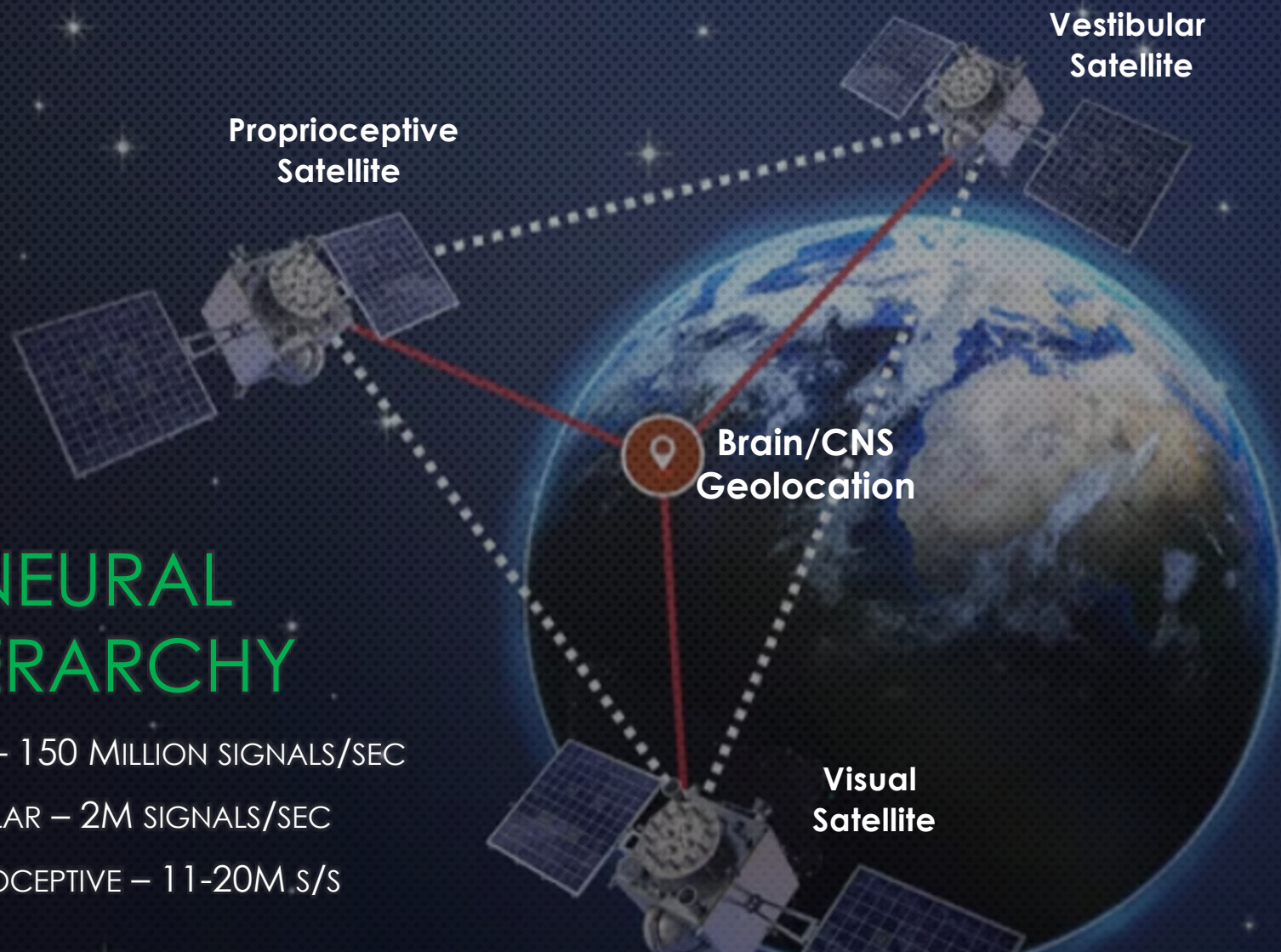


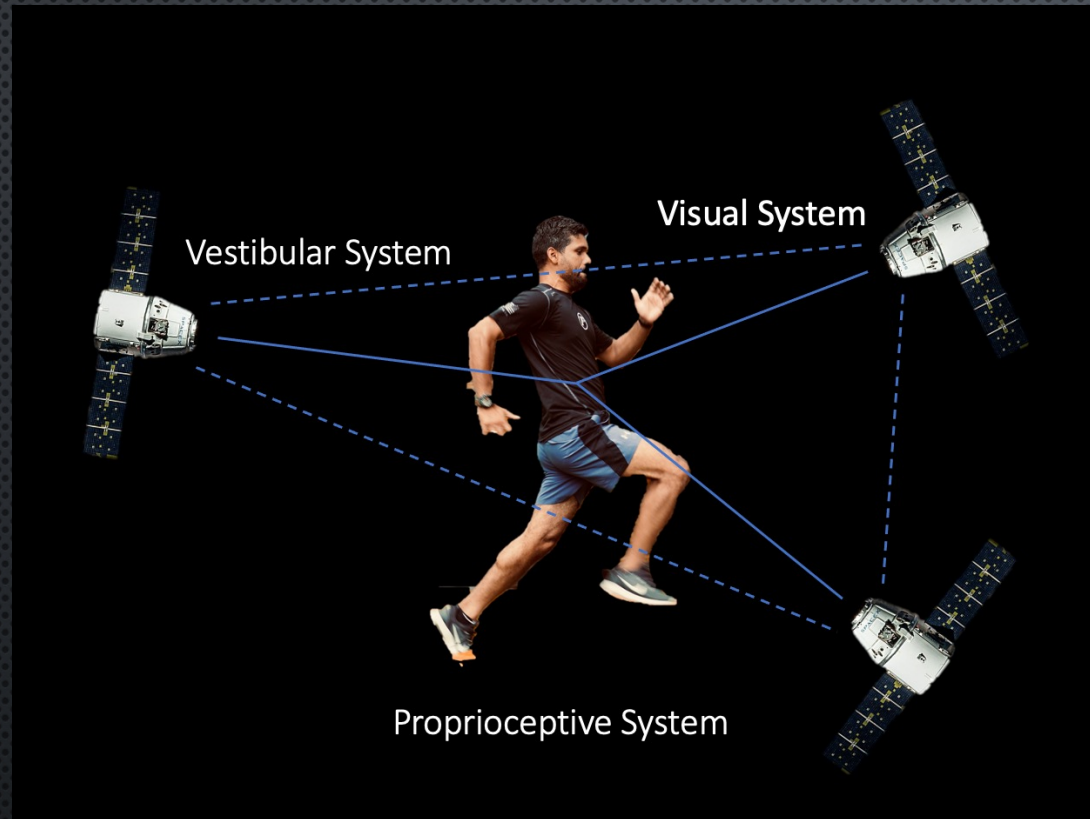
NEURAL HIERARCHY

VISUAL – 150 MILLION SIGNALS/SEC

VESTIBULAR – 2M SIGNALS/SEC

PROPRIOCEPTIVE – 11-20M s/s





QUALITY MOVEMENT
(OUTPUT)

=

QUALITY INPUTS +
INTERPRETATION +
INTEGRATION

Sensory Mismatch



INTERPRETATION OF “THREAT”

- THE BRAIN RECEIVES, FILTERS AND THEN INTERPRETS THE INPUT SIGNALS.
- ANSWERS THE QUESTION:

AM I **SAFE** OR **UNSAFE**?

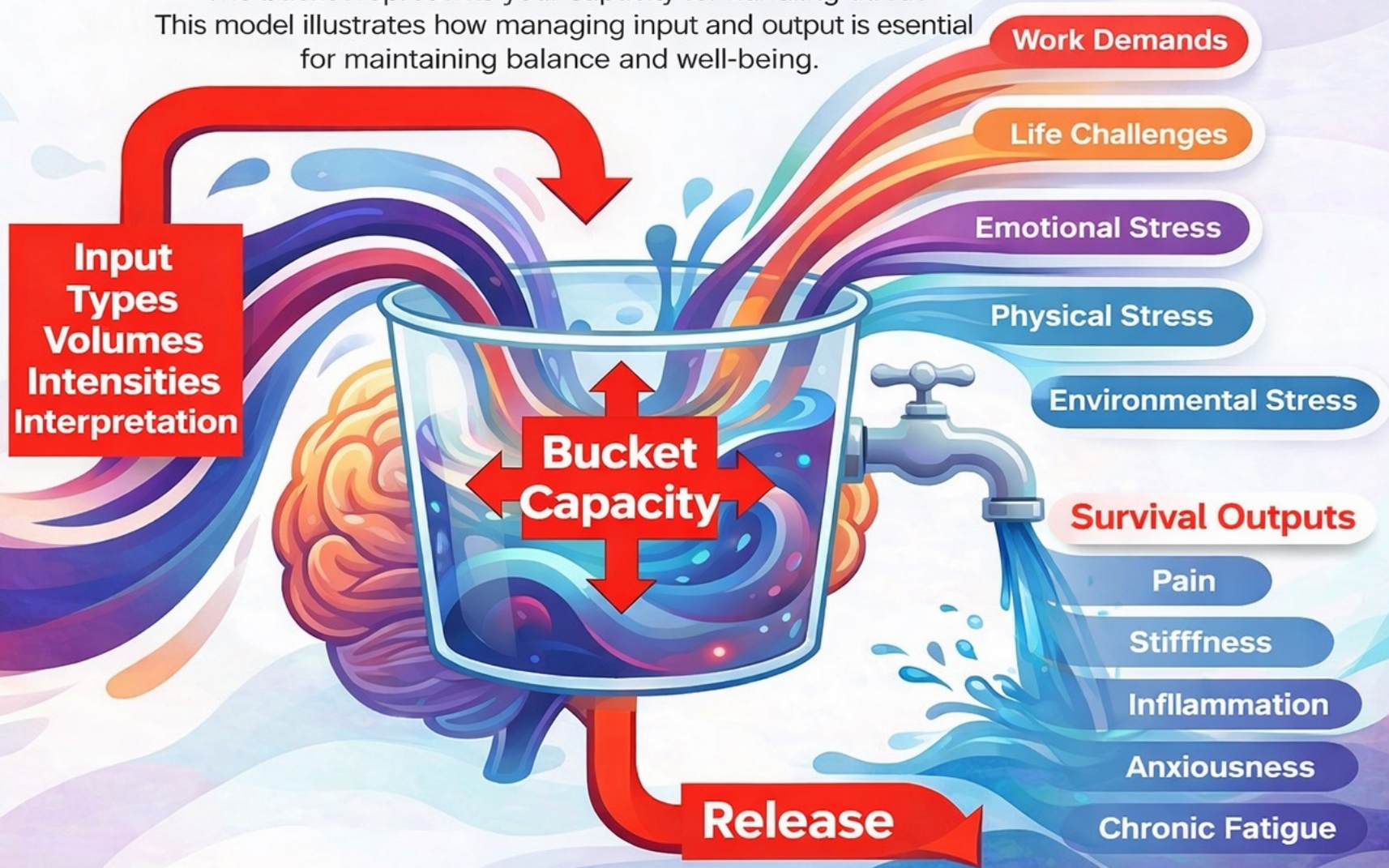


THE BRAIN IS PREDICTIVE

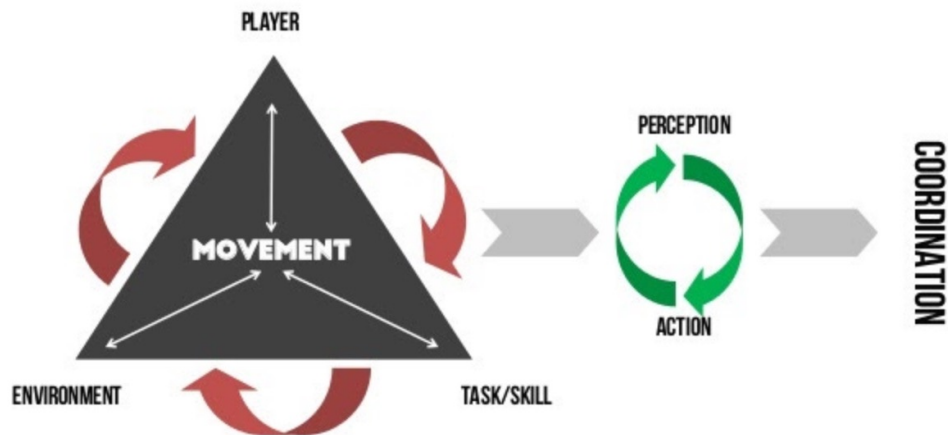
- If it waits to feel what is happening....It could be too late.....
-It makes its best guess dependent upon the interpretation.....
-Interpretation is based on experience, current understanding, or social/cultural influences



The bucket represents your capacity for handling threat.
This model illustrates how managing input and output is essential for maintaining balance and well-being.

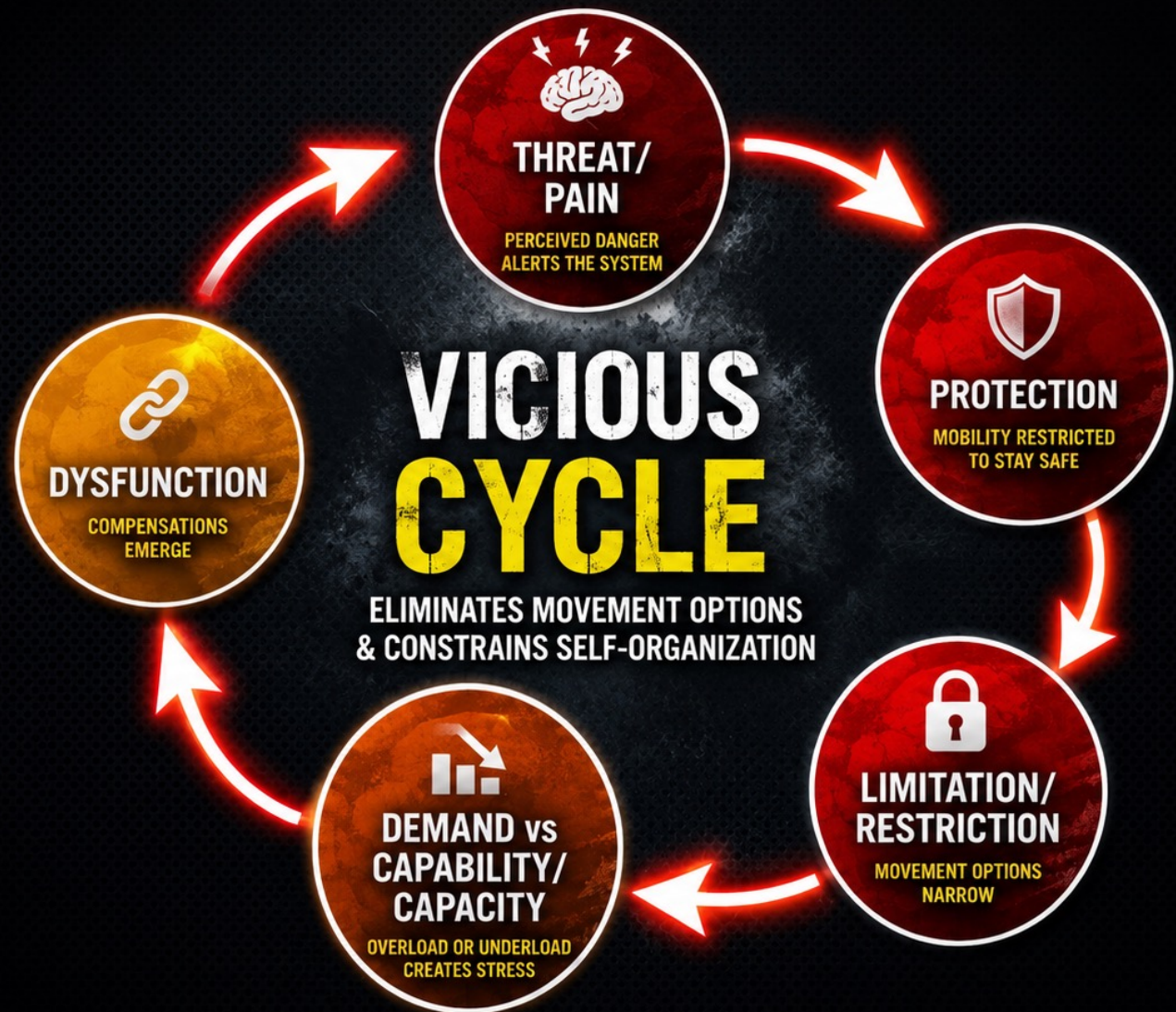


SELF-ORGANIZATION (CONSTRAINT-BASED) MODEL



MOTOR LEARNING

- **ECOLOGICAL DYNAMICS** – THE BODY SELF ORGANIZES MOVEMENT AND SKILLS THROUGH CONTINUOUS INTERACTION BETWEEN THE INDIVIDUAL, THE TASK, AND THE ENVIRONMENT
- **CONSTRAINTS BASED LEARNING** - USING THE MANIPULATION OF CONSTRAINTS TO GUIDE THE EMERGENCE OF DESIRED MOVEMENT BEHAVIORS.





THE BRAIN WON'T ACCESS WHAT IT DOESN'T KNOW OR DOESN'T PERCEIVE AS SAFE

SELF-ORGANIZATION CAN ONLY OCCUR WITHIN THE OPTIONS THE
NERVOUS SYSTEM BELIEVES IT HAS.

THE SYSTEM DOESN'T EXPLORE WHAT IT DOESN'T PERCEIVE.
IT DOESN'T ORGANIZE AROUND WHAT IT DOESN'T RECOGNIZE.

**THE NERVOUS SYSTEM CHOOSES THE PATH OF GREATEST SAFETY,
NOT EFFICIENCY**



THE BRAIN WON'T
USE WHAT IT
DOESN'T KNOW
OR WHAT IT
PERCEIVES IS
UNSAFE

OFF-LOADING PATTERN





*“FEAR OF MOVEMENT, PAIN
CATASTROPHIZING, ANXIETY AND
NERVOUS SYSTEM SENSITIZATION APPEAR
TO BE THE MAIN CONTRIBUTORS TO PAIN
AND DISABILITY.” DR. LORIMER MOSELEY*



PAIN CONTROL IS IMPERATIVE

“WE DO NOT YET KNOW THE EXACT COMBINATION OF PAIN SEVERITY, DURATION, ETIOLOGY, AND GENETIC PREDISPOSITION THAT LEADS TO CHRONIC PAIN, BUT ONE IMPORTANT CONCLUSION IS CLEAR; **INADEQUATE PAIN CONTROL INCREASES THE LIKELIHOOD THAT PAIN WILL BECOME CHRONIC.**” (WHITTEN, ET AL “TREATING CHRONIC PAIN: NEW KNOWLEDGE, MORE CHOICES”)



BEGIN WITH THE
PERSON.....AND
END WITH THE
PROBLEM

DIAGNOSING AND IMAGING

“ON MRI EXAMINATION OF THE LUMBAR SPINE, MANY PEOPLE WITHOUT BACK PAIN HAVE DISK BULGES OR PROTRUSIONS BUT NOT EXTRUSIONS. GIVEN THE HIGH PREVALENCE OF THESE FINDINGS AND OF BACK PAIN, THE DISCOVERY BY MRI OF BULGES OR PROTRUSIONS IN PEOPLE WITH LOW BACK PAIN MAY FREQUENTLY BE COINCIDENTAL.” JENSEN, M.C., BRANT-ZAWADZKI, M.N., OBUCHOWSKI, N., MODIC, M.T., MALKASIAN, D., AND ROSS, J.S., *MAGNETIC RESONANCE IMAGING OF THE LUMBAR SPINE IN PEOPLE WITHOUT BACK PAIN*, **N ENGL J MED** 1994;331:69-73, JULY 14, 1994

DOI: 10.1056/NEJM199407143310201



WHAT IS THE SPINE BUILT TO DO?

- RESIST COMPRESSION
- DISSIPATE FORCES
- TRANSFER FORCES ACROSS THE TRUNK
- ALLOW FOR INTERVERTEBRAL MOTION IN MULTIPLE PLANES AND COMBINATIONS



Your Spine is Built to Move!!

LET'S STOP CONFUSING GEN POP VS PRO ATHLETE

GEN POP

- RISK MITIGATION, PREVENTION, PAIN MANAGEMENT
- **HOW DO WE NOT GET HURT**



PRO ATHLETE

- SPORT IS INHERENTLY UNHEALTHY
- INABILITY TO PERFORM IS NOT AN OPTION
- **HOW ARE WE PREPARED FOR CHAOS**





ASSESSMENT

- HOLISTIC
- ZOOM IN AND ZOOM OUT
- CONTEXTUAL
 - WHAT DOES THEIR BODY — SPINE NEED TO DO?

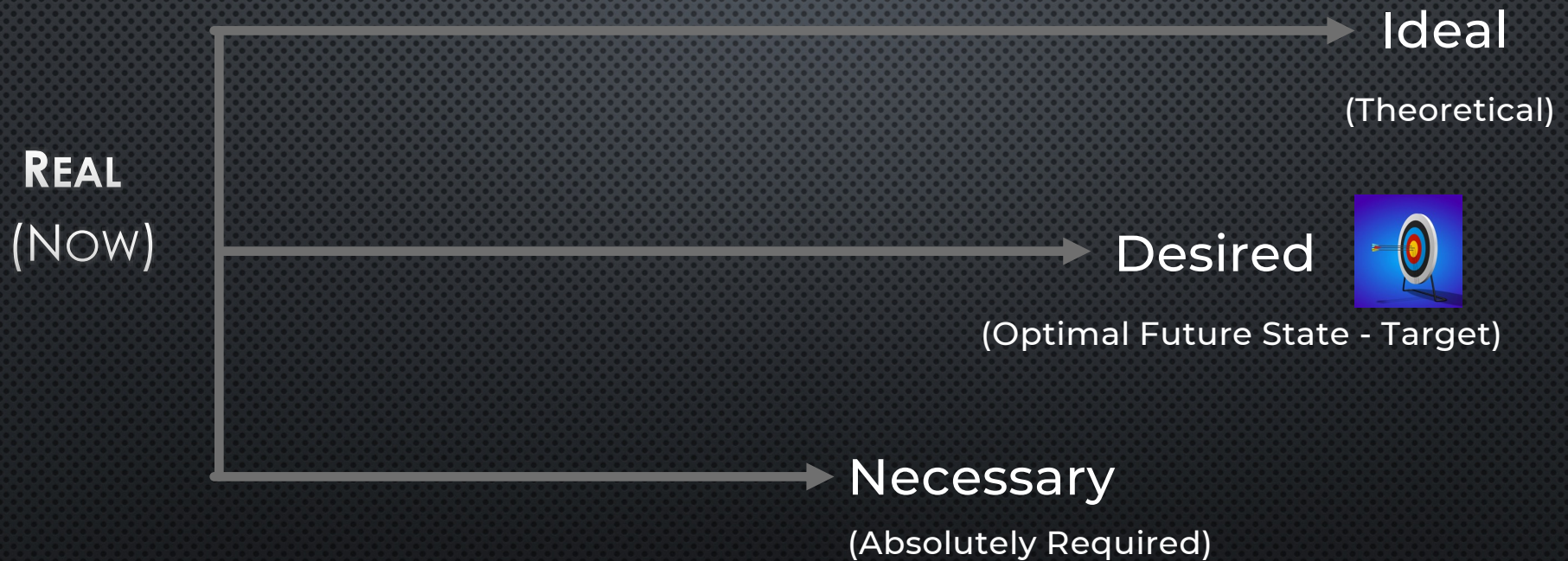
CONSIDERATIONS FOR SPINE ISSUES

- ARE ALL SEGMENTS ABOVE AND BELOW CONTRIBUTING TO SPINE MOVEMENT?
- PRIOR OR CURRENT HIP PATHOLOGY OR LIMITATION
- PRIOR OR CURRENT KNEE ISSUES
- PRIOR OR CURRENT ANKLE/FOOT ISSUES
- PRIOR OR CURRENT SHOULDER PATHOLOGY
- **PRIOR CONCUSSION!**



GAP ANALYSIS

FIX WHAT THEY CAN'T DO WHILE YOU TRAIN WHAT THEY CAN DO



DEVELOP A HYPOTHESIS

- HAS FOLLOWED DIRECTED METHODS OF RTP WITH NO POSITIVE OUTCOME
- FOCAL POINT HAS BEEN ON TRUNK CONTROL — IS THIS THE SOLUTION?
- WHAT'S MISSING MAY BE THE KEY
- POSSIBLE OVER-FOCUSED ON PAIN MANAGEMENT TO DATE
- HAS HE LOST HOPE?

$y = g(x)$
Secant Lines

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$
$$f(x) = \lim_{h \rightarrow 0} x^2$$
$$= \lim_{h \rightarrow 0} x^2 -$$
$$= \lim_{h \rightarrow 0} 2x$$
$$\frac{(x+h) - g(x)}{h}$$
$$= \lim_{h \rightarrow 0} h/2$$









WHAT WAS HE MISSING?

FOUR ZONES OF ADAPTATION

- ANKLE/FOOT
- HIP
- T-SPINE
- SHOULDER

A photograph of an ice hockey player in a black and white uniform, number 13, wearing a helmet and holding a stick. A semi-transparent anatomical overlay of the human spine is shown on the player's back, with the lumbar region highlighted in red to indicate a focus on back health. The player is in a dynamic pose on the ice.

KEYS TO AVOIDING OR TREATING BACK INJURIES WITH YOUR PLAYERS

- **IT'S NOT THEIR BACK – IT'S WHAT THEY CAN'T DO THAT'S HURTING THEM**
- WORK ON WHAT YOU CAN DO TOGETHER TO REDUCE THREAT AND IMPROVE MOVEMENT QUALITY
- RE-ESTABLISH POSTURE AND EQUITABLE SPINAL MOVEMENT CAPABILITY AND CAPACITY
- REMOVE OR MITIGATE NEGATIVE INFLUENCING FACTORS

REMEMBER

- IF A JOINT, RANGE, OR MOVEMENT STRATEGY HAS BEEN ASSOCIATED WITH PAIN, INSTABILITY, OR UNCERTAINTY—EVEN YEARS AGO—THE NERVOUS SYSTEM MAY QUIETLY REMOVE IT FROM CONSIDERATION. NOT BECAUSE IT'S WEAK. NOT BECAUSE IT'S IMMOBILE. BUT BECAUSE IT DOESN'T FEEL TRUSTWORTHY.
- WHEN WE ASK THE SYSTEM TO SELF-ORGANIZE, IT WILL... JUST NOT IN THE WAY WE HOPED.
- IT WILL SELF-ORGANIZE AROUND PROTECTION.



HOW TO BUILD A BETTER SPINE

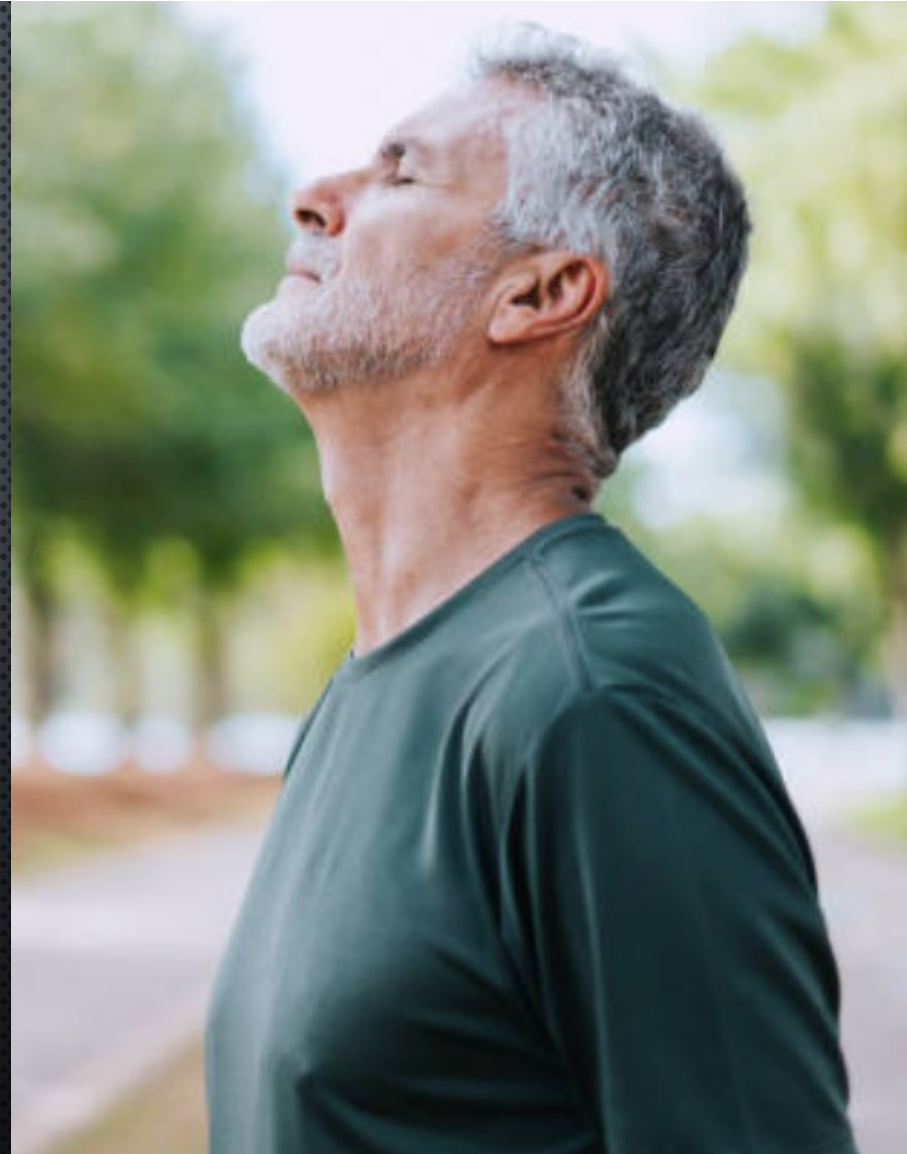
- REDUCE THREAT!!
- ESTABLISH A QUALITY TRUNK CYLINDER
- ESTABLISH GOOD BREATH
- BUILD EQUITABLE PLANAR SPINAL MOTION (CAPABILITY)
- BUILD CAPACITY IN PLANAR MOTION
- BUILD EQUITABLE COMBINED MOTIONS
- BUILD CAPACITY IN COMBINED MOTIONS
 - FUNCTIONAL MOBILITY — WITH SPEED, LOAD, AND ENDURANCE
- BUILD GREAT HIPS!



MANAGING THREAT

SOME GO-TO INHIBITION STRATEGIES

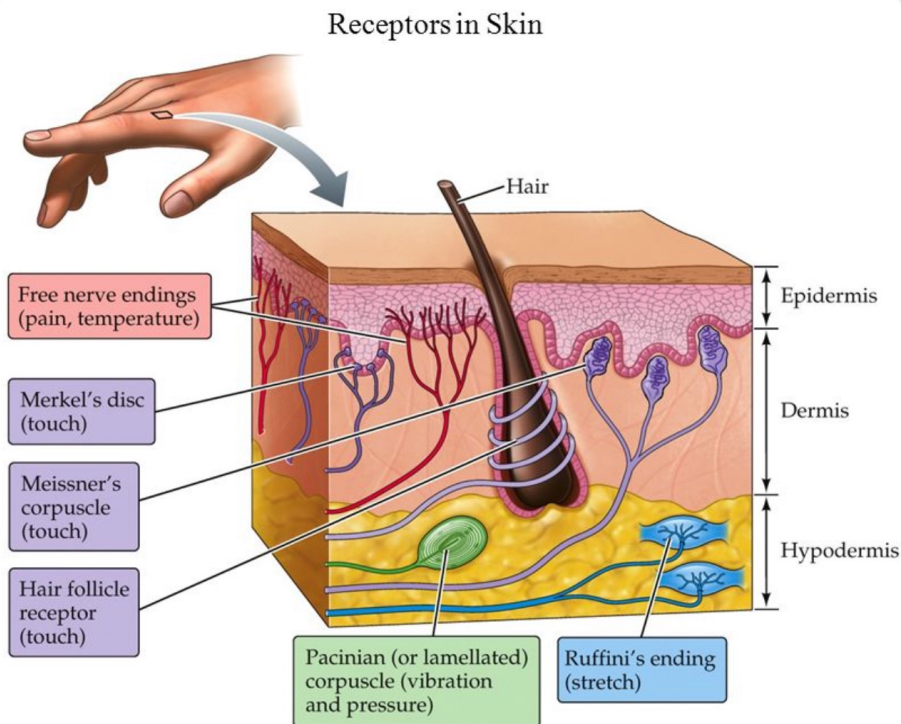
- BREATHING — AWARENESS — RATE — RHYTHM — LONGER CYCLES — 2 IN 8 OUT
- VAGUS NERVE STIMULATION
 - HUMMING
 - TARGETED VIBRATION
- REDUCED LIGHT AND SOUND
 - PINHOLE GLASSES, HAT
- ABDOMINAL BELT — PRESSURE GARMENTS — WEIGHTED BLANKET
- NEWS - NAP/CHANGE ENVIRONMENT, EAT, WALK/MOVE, SHOWER/SENSORY EXPERIENCE



PROPRIOCEPTIVE NEUROLOGY

THERE ARE MANY DIFFERENT SENSORY AND PROPRIOCEPTIVE RECEPTOR TYPES

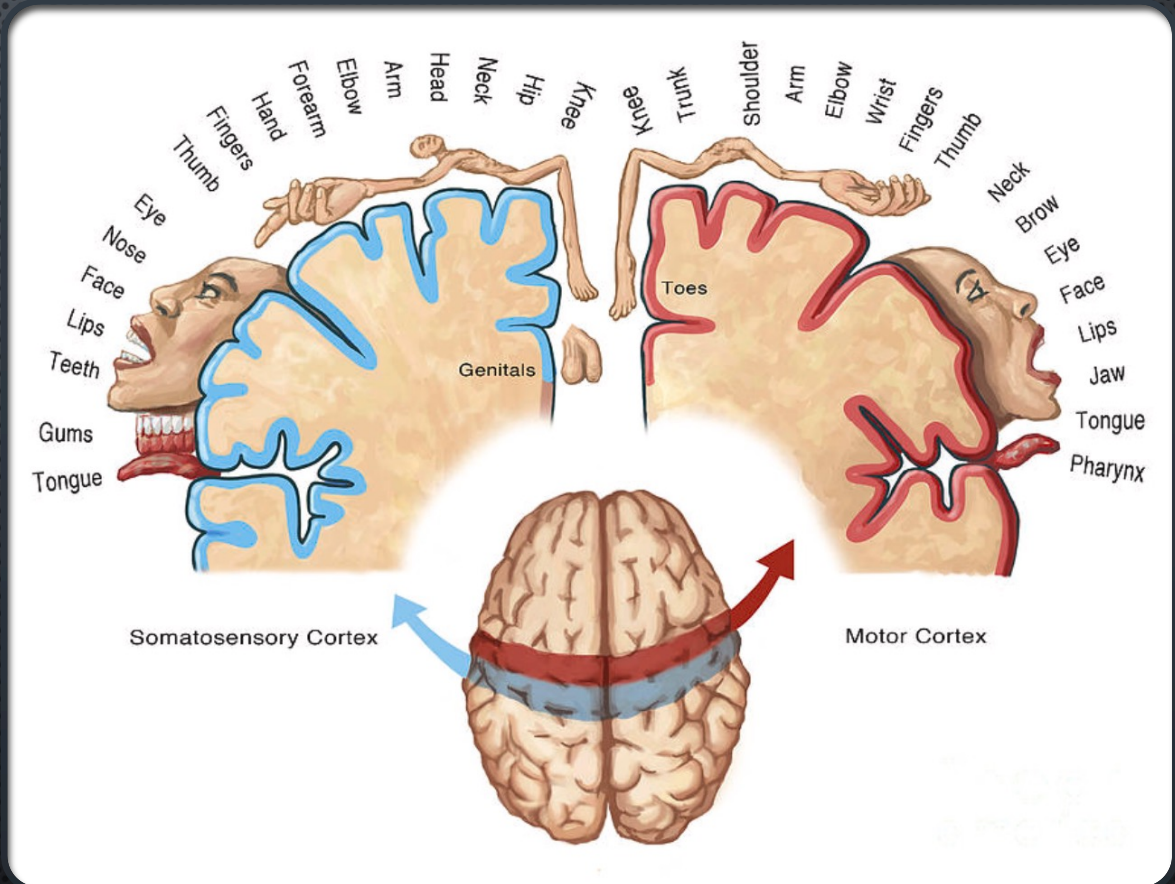
- SENSORY (DORSAL COLUMNS)
 - SKIN MOVEMENT & VIBRATION
 - HIGH FREQUENCY VIBRATION
 - SKIN STRETCH
 - HAIR MOVEMENT
 - LIGHT TOUCH & LIGHT PRESSURE
 - NOCICEPTION & TEMPERATURE
- MOTOR - PROPRIOCEPTIVE:
 - MUSCLE STRETCH/VELOCITY
 - MUSCLE CONTRACTION
 - JOINT DIRECTION
 - JOINT PRESSURE
 - JOINT TORQUE



BIOLOGICAL PSYCHOLOGY 7e, Figure 8.4
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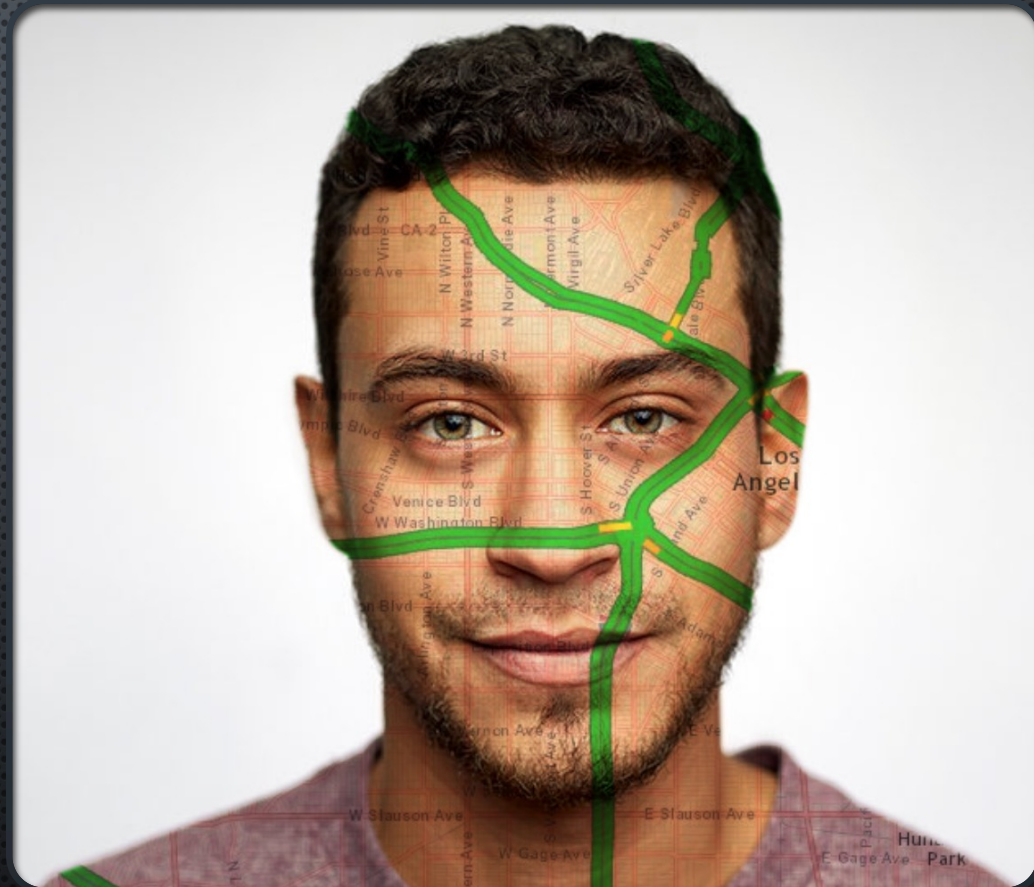
SENSORY/MOTOR CORTEX

- 3D MAP OF OUR BODY
- MUST BE ABLE TO FEEL MOVEMENT IN ORDER TO PERFORM MOVEMENT
- NEURONS THE WIRE TOGETHER FIRE TOGETHER
- INTIMATE RELATIONSHIP CREATES A FUNCTIONAL RELATIONSHIP



THE PROPRIOCEPTIVE MAP

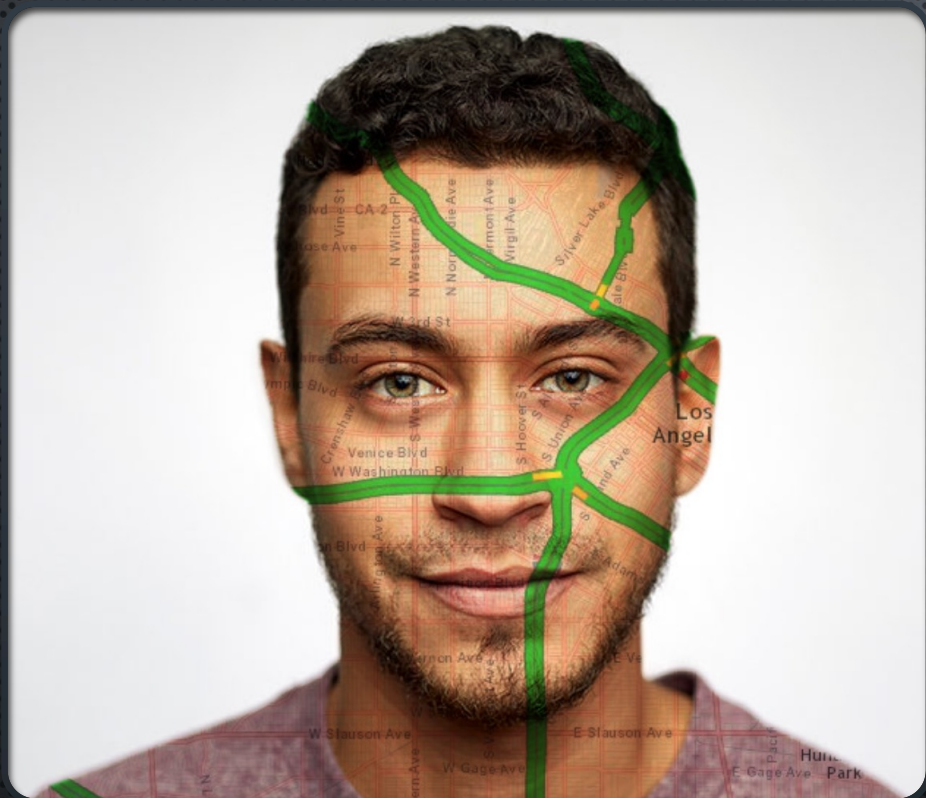
- THINK OF PROPRIOCEPTION AS A 3D MAP OF THE BODY
- A BLURRED MAP RESULTS IN THE PERCEPTION OF THREAT
- CLARIFYING THE MAP REDUCES THREAT AND IMPROVES THE ABILITY TO COORDINATE AND CONTROL
- RESTORE SENSORY/MOTOR FUNCTION



PROPRIOCEPTION

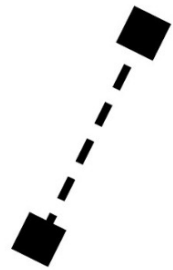
- ANY INPUT THAT STIMULATES SENSORY OR MOTOR RECEPTORS CAN BE CONSIDERED IN THE SPHERE OF PROPRIOCEPTIVE INPUT
- MOST MANUAL THERAPIES OR TOUCH THERAPIES, AS WELL AS COMPRESSIVE INPUTS, VIBRATION STIMULUS — ANYTHING SENSORIMOTOR CAN BE CONSIDERED A PROPRIOCEPTIVE INPUT



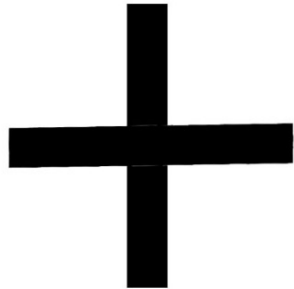


TO CLARIFY THE PROPRIOCEPTIVE MAP

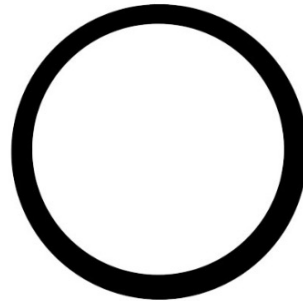
- ACTIVATE SENSORY RECEPTORS AND MECHANORECEPTORS
- GREATEST NUMBER ARE FOUND IN THE SKIN AND THE JOINTS
- SENSORY BEFORE MOTOR
- JOINT CONGRUENCY ESTABLISHES BALANCED HIGH-QUALITY INPUTS
- COMPLEX NON-LINEAR MOTION DRIVES ROBUST INPUT



ISOMETRIC



LINEAR



CIRCULAR

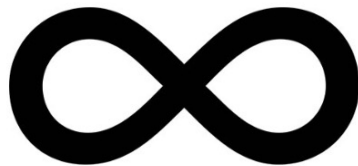


FIGURE 8

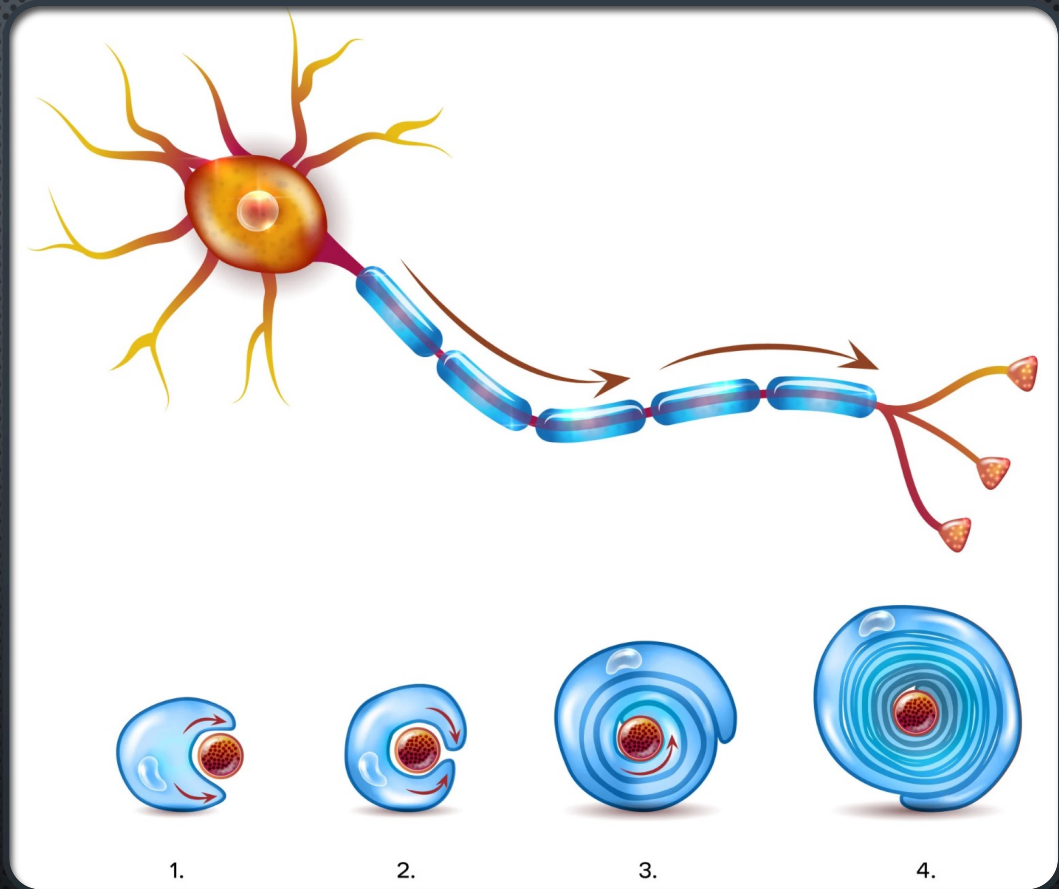


SPIRAL

COMPLEX
NON-LINEAR
JOINT
MOBILIZATIONS

AGGREGATE LOAD IS THE KEY

MYELIN GETS LAID DOWN WHENEVER A NEURAL PATHWAY IS USED FREQUENTLY, WHICH MAKES IT FASTER AND MORE EFFECTIVE OVER TIME. (PHYSICAL THOUGHTS, ACTIONS, BEHAVIOURS, MOVEMENTS, ETC., YOUR BRAIN GETS BETTER AT WHAT YOU DO OVER AND OVER AGAIN)



MUST ASSESS FOR THREAT OUTCOMES

- WHEN YOU INTRODUCE INPUTS, THE BRAIN INTERPRETS THOSE INPUTS AND DECIDES IF THE INPUT IS THREATENING, INCONSEQUENTIAL, OR THREAT REDUCING
- IF INCONSEQUENTIAL, THE INTENSITY OR VOLUME OF THE INPUT MAY NOT HAVE BEEN ENOUGH TO STIMULATE A RESPONSE

ASSESS- REASSESS - THREAT PERCEPTION

Threat Increase



Decreased
Force
Production

Reduced
Range of
Motion

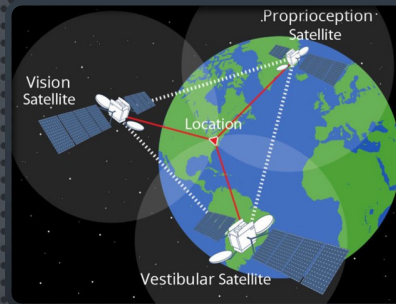


Increased
Range of
Motion

Increased
Force
Production

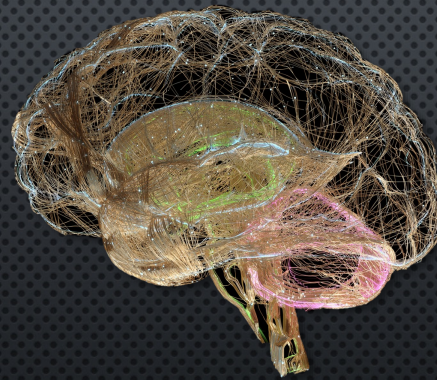
Threat Reduction

We observe
and assess
outputs



SOFTWARE
ISSUES

Input issue?



Output Issue?

Interpretation -
Integration
or Decision making
issue?



TRAINING WHAT IS AVAILABLE – WHAT CAN THEY DO?

- WHAT ARE THEY PHYSICALLY CAPABLE OF DOING, KEEP THEM ACTIVE?
- WHAT CAN THEY MODIFY?
- CHANGE THE FOCUS AWAY FROM PAIN AND DEBILITATION TOWARD HOPE AND POSSIBILITY



THE SPINAL RECONDITIONING PROCESS

- **ADDRESS HIGHER ORDER SYSTEMS AND REFLEXES**
- ESTABLISH A QUALITY STARTING POSITION AND BREATH
- USE LOCAL STIMULATION AND LOCAL MOBILIZATION TO CLARIFY THE MAP
- IMPRINT NEW ROM WITH ISOMETRIC HOLDS AT NEW END RANGES AND THROUGHOUT NEW RANGE - YIELDING OR OVERCOMING
- MOVE INTO AND OUT OF NEW POSITIONS SLOWLY WITH CONFIDENCE
- BUILD CAPACITY THROUGH DIFFERENT LOADING STIMULUS
- ADD SPEED TO MOVE INTO AND OUT OF NEW POSITIONS WITH CONFIDENCE
- INTEGRATE NEW MOVEMENT INTO FUNCTIONAL ACTIONS
- ADD UNCERTAINTY
- ADD CHAOS

PLAYER MUST 'OWN' THE NEWLY ACQUIRED MOTION FOR TRUE CHANGE

- **DON'T JUST GIVE THEM THE RANGE, HELP THEM OWN IT.**
- S.A.I.D. PRINCIPLE
- NEW RANGE NEEDS ACTIVE, AUTONOMOUS, COORDINATED MOTION TO BE DONE IN REPETITION, AND PROGRESS WITH LOAD, IN ORDER TO GROOVE NEW PATTERN AND SUPPORT THE MOVEMENT





ESTABLISHING BASELINE POSTURE AND BREATHING











ESTABLISHING SPINAL MOVEMENT CAPABILITY IN PLANES







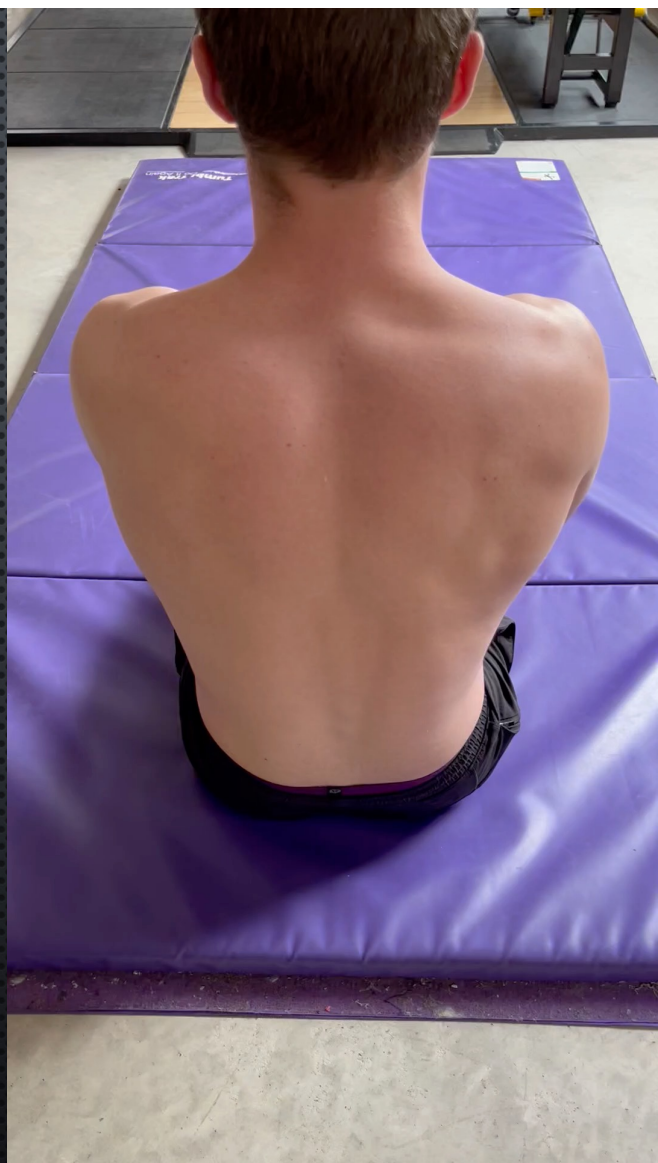




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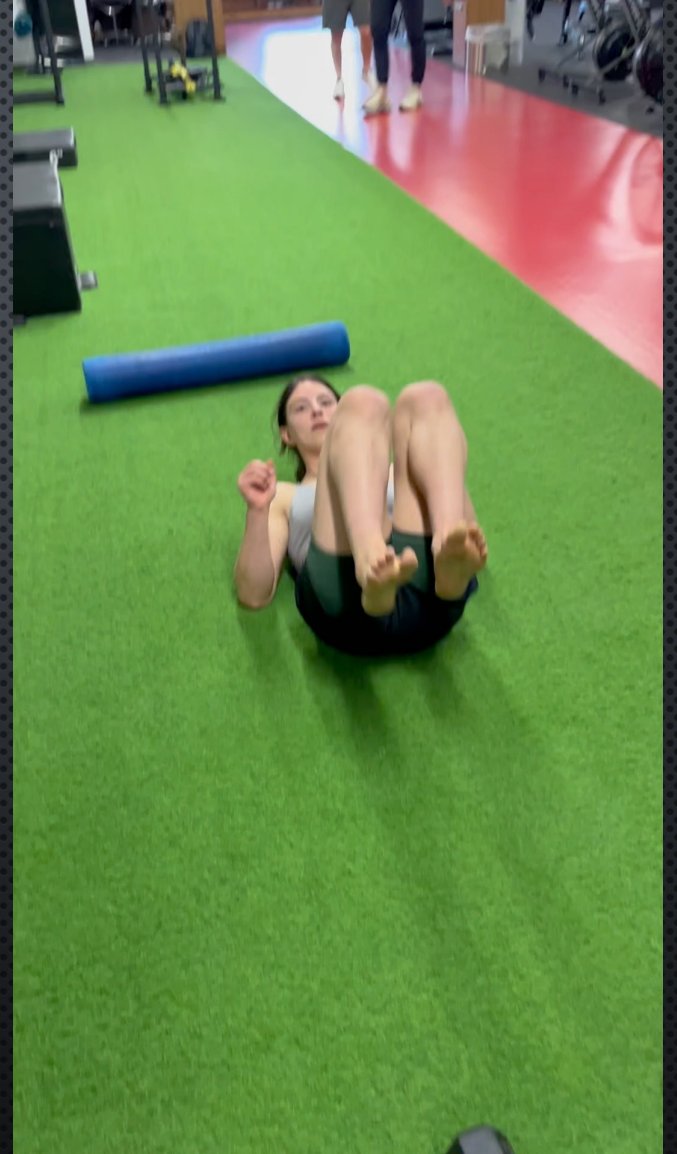






ADDRESSING SPINAL MOVEMENT CAPACITY IN PLANES











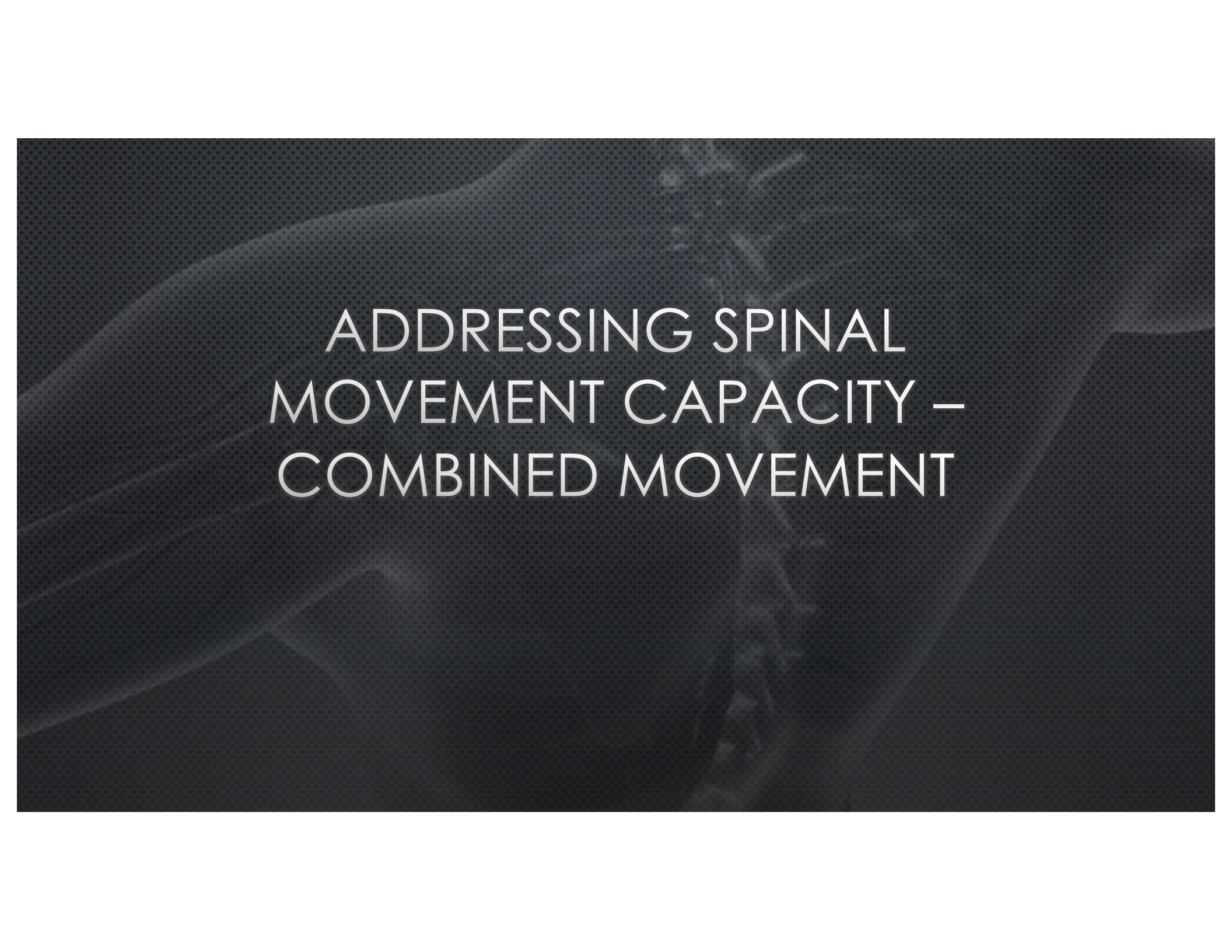




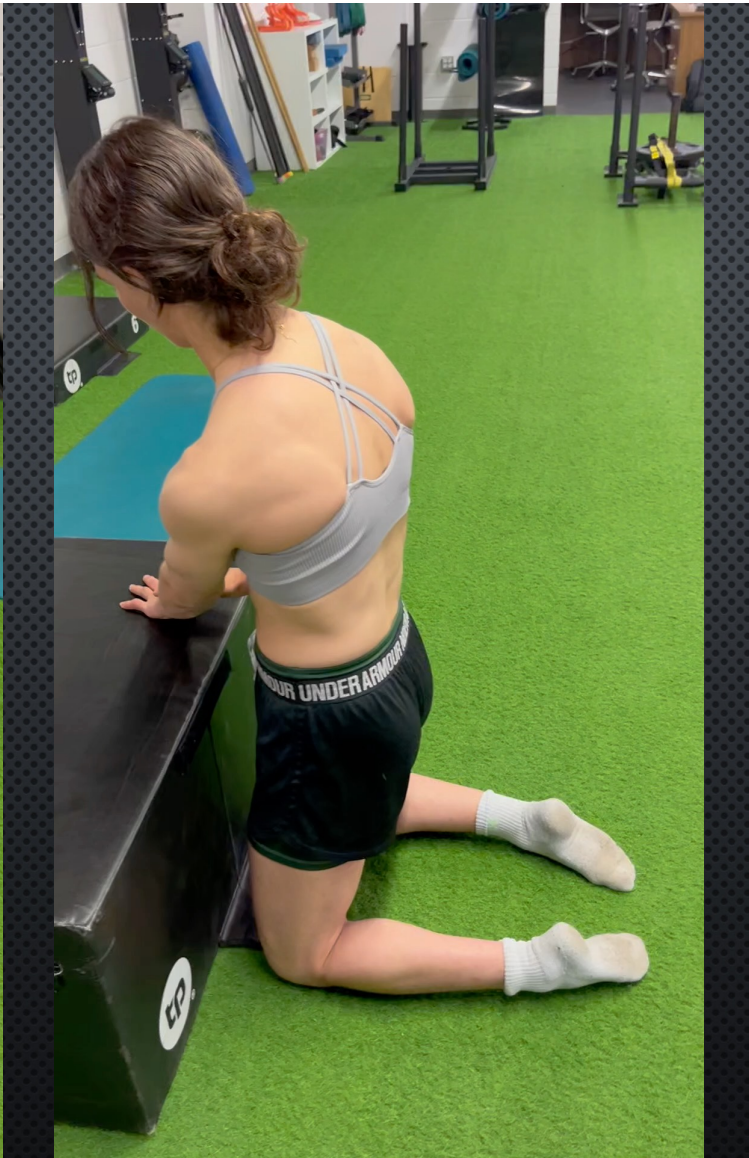


ADDRESSING SPINAL MOVEMENT CAPABILITY COMBINED MOVEMENT





ADDRESSING SPINAL MOVEMENT CAPACITY – COMBINED MOVEMENT





A grayscale, halftone-style image of a person's legs and feet, showing a leg extension exercise. The person is lying on their back with their knees bent and feet flat on the floor. The legs are extended forward, and the feet are pointed. The image is centered on a dark background.

ADDRESSING HIP FUNCTION







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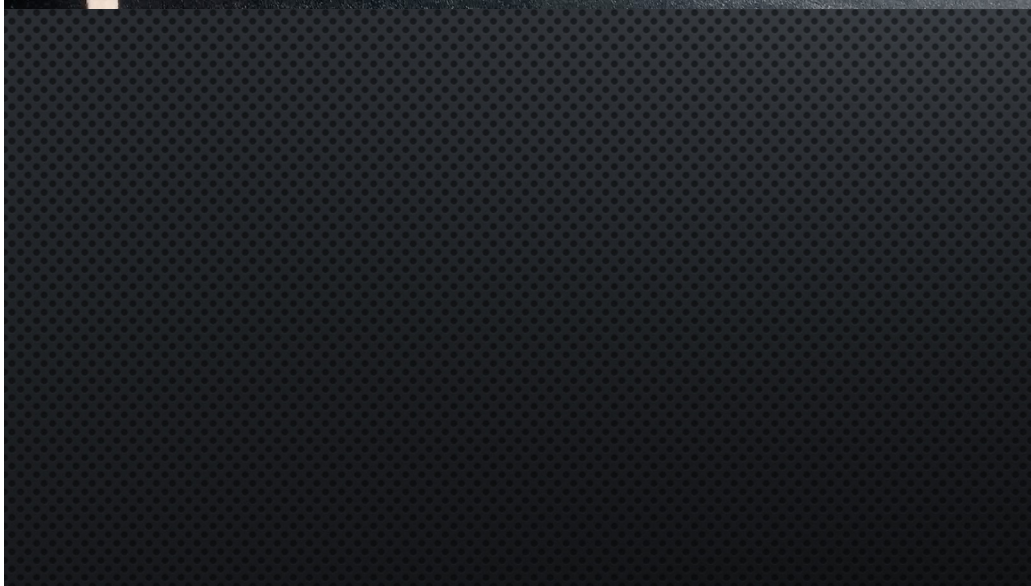
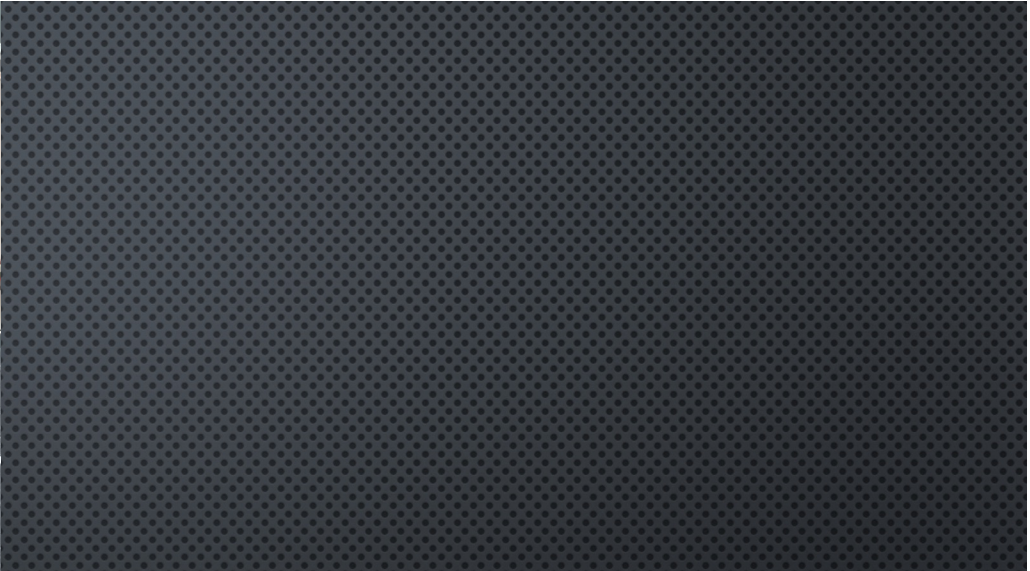
ADDRESSING PELVIS/SPINE RELATIONSHIP

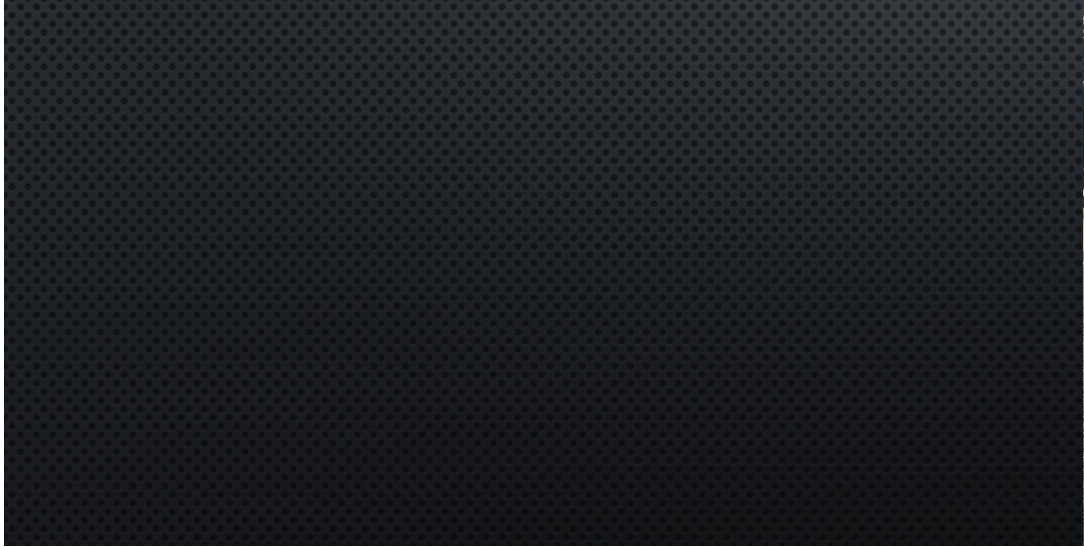
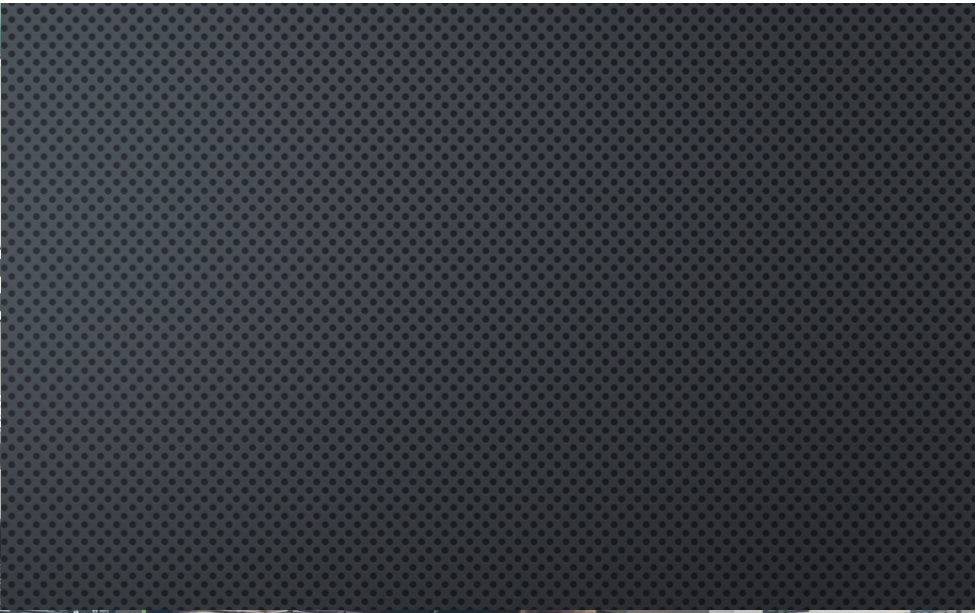


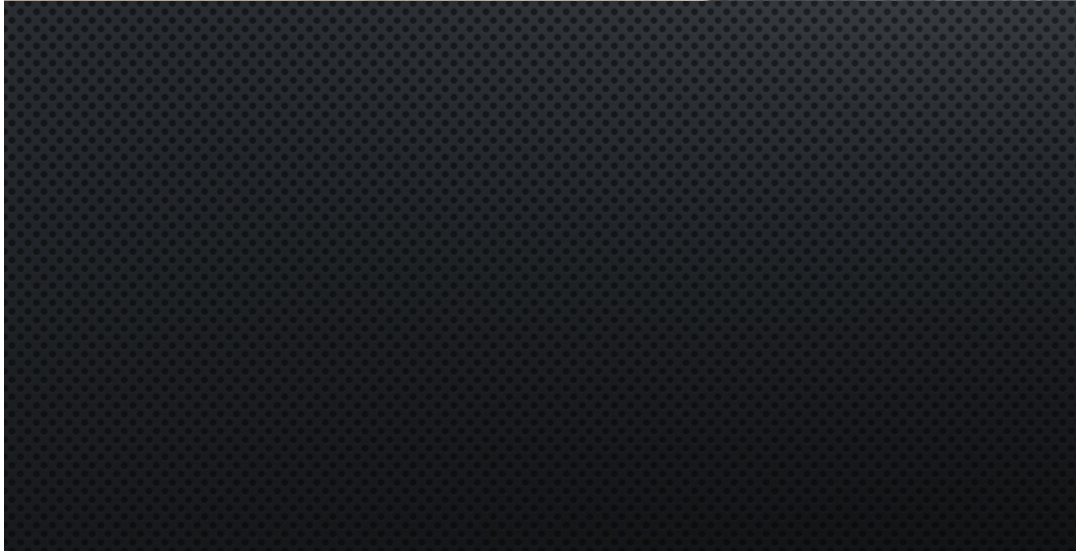
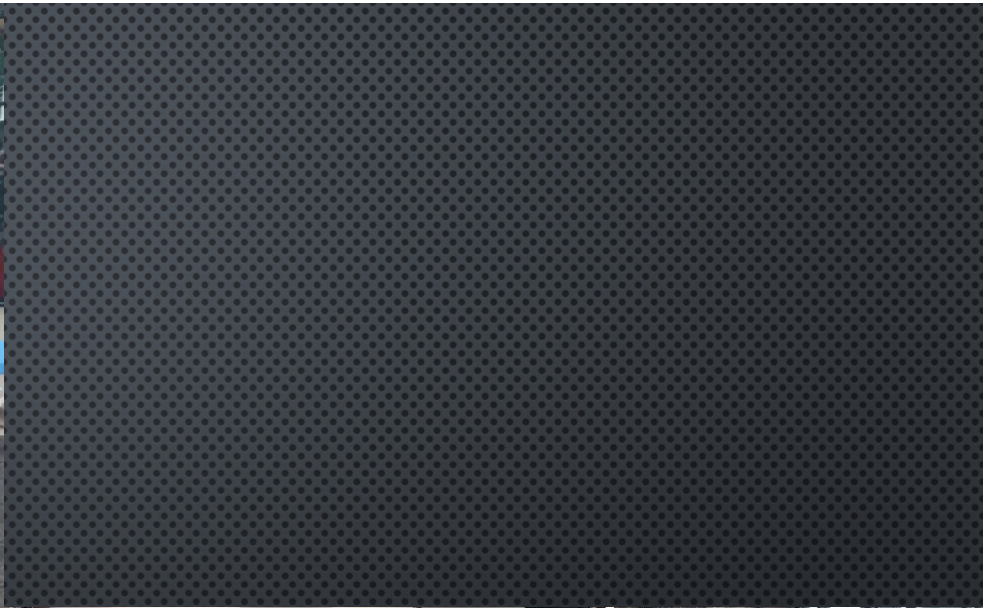


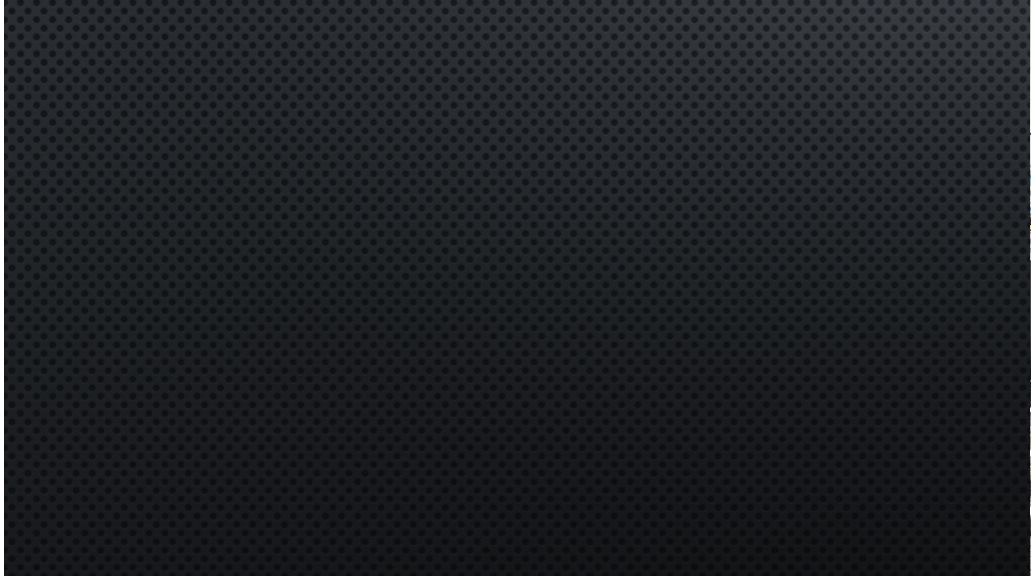
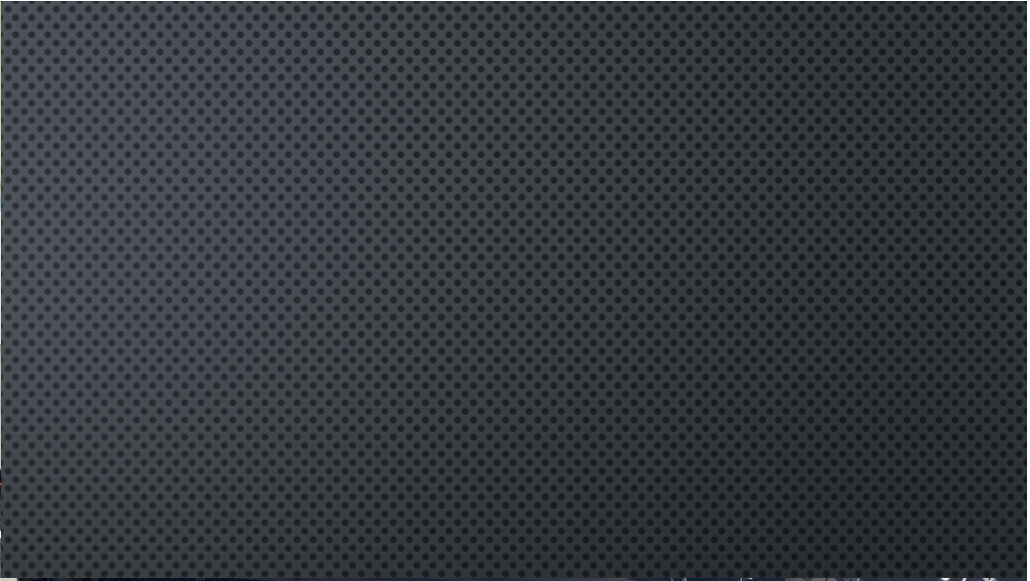


INTEGRATED
HOCKEY RTP









GALAXY NIGHT



5



4

ANALYTICS
POWERED BY

ssas



Gabriel Vilardi gets two points in debut, Kings score five goals in win over Panthers

Vilardi Scores First NHL Goal in Big Win



Kings right wing Martin Frk celebrates his goal with center



GABE ARRIVED IN
THE NHL IN EARLY
2020 – STILL PLAYS
TODAY WITH THE
WINNIPEG JETS



THANK
YOU FOR
THE
INVITATION
TO SPEAK