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WELCOME TO THE HAPPY FEET PROGRAM!

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WEEK 1

BELIEFS - Our world appears through the lenses of our beliefs. We filter all information, including physiological sensations such as pain through these beliefs and then create meaning which translates in the expression of our experience.

Write down 3 positive beliefs about your foot condition:

1. _____
2. _____
3. _____

Write down 3 negative beliefs you have about your foot pain:

1. _____
2. _____
3. _____

GET LEVERAGE > CREATE HEALTHY RITUALS > MANAGE BELIEFS > LIVE A BETTER LIFE

It is our rituals which define us and therefore define our outcome.

- Consider this in the context of:
  - Time management
  - Morning routine
  - Habit shifting - away from bad to good *(consider what are some bad habits which perpetuate your foot pain that could be changed through conscious habit shifting)*

OUR EXPECTATIONS OF YOU:

1. Commitment
2. Home exercises
3. Questions
4. Home work
5. Feedback

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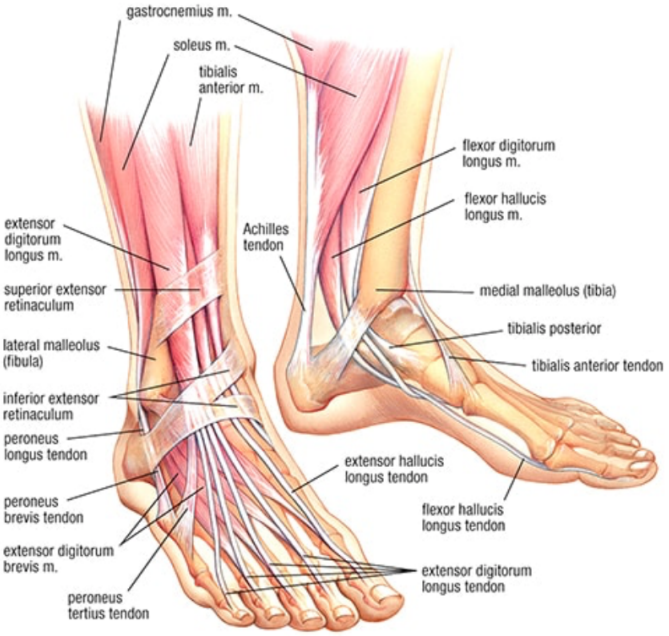
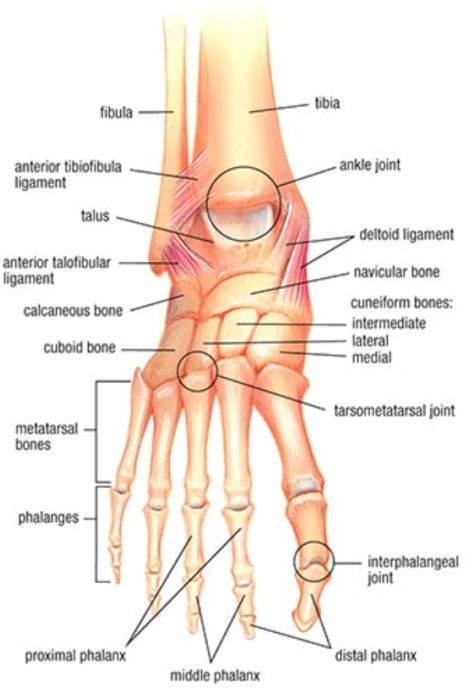
WEEK 2

LET'S GET THE ANATOMY OUT OF THE WAY!

Relevant Anatomy and Biomechanical Principles

- The foot is a complex structure made up of 26 bones
- Attached to these bones are various ligaments and muscles
- Around the foot are also some sacs of fluid, known as bursa. These help reduce the friction between the bones and the muscles / tendons





Tendons and Muscles of the foot:

- Tendons attach muscles to bones.
- Muscles provide support and stability to flex, extend and rotate the foot.
- Fascia is a strong sheath-like connective tissue that supports the muscles.
- The major muscle groups of the foot are the calves, toe flexors, toe extensors, peroneals and interosseous muscles.

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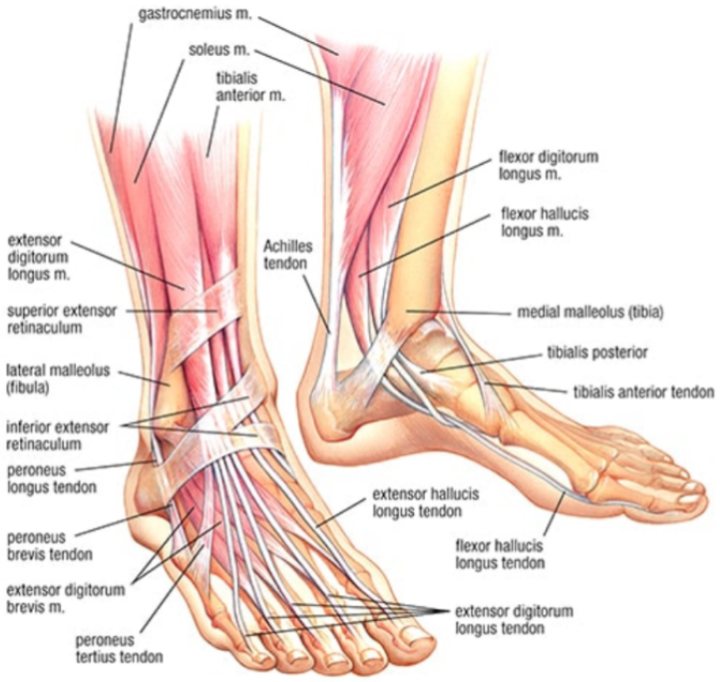
Muscle Groups:

- Calves:
  - Made up of 3 muscles, Gastrocnemius, Soleus, Tibialis Posterior.
  - Aid in flexion of the foot
  - Important muscles for power activities including running and cycling
- Toe / Foot Flexors:
  - Made up of 4 muscles, Flexor Hallicus Longus, Flexor Hallicus Brevis, Flexor Digitorum Longus, Flexor Digitorum Brevis
  - Aid in flexion of the toes
  - Important muscles in power activities like running and cycling, also very important in stability of the foot
- Toe / Foot Extensors:
  - Made up of 5 muscles, Extensor Hallicus Longus, Extensor Hallicus Brevis, Extensor Digitorum Longus, Extensor Digitorum Brevis and Tibialis Anterior
  - Aid in extension and rotation of the toes
  - Important muscles in stability of the foot and important to clear the foot with walking

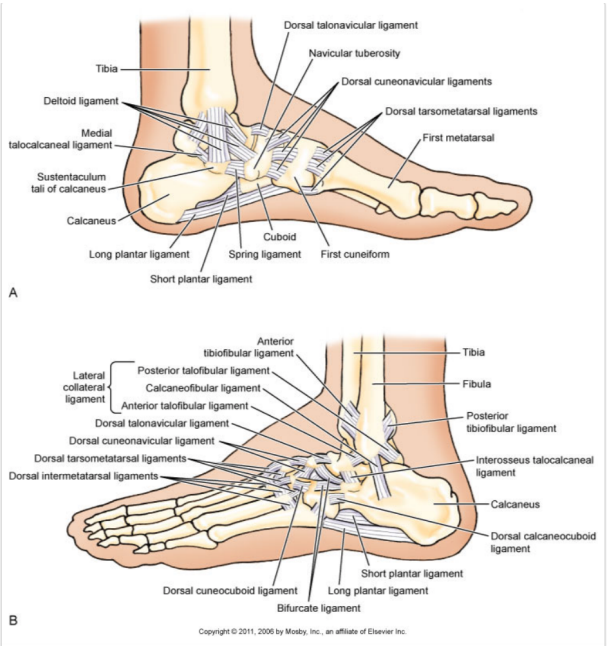


- Peroneals:
  - Made up of 2 muscles, Peroneus Longus and Peroneus Brevis.
  - Aid in flexion and rotation of the foot
  - Important muscles for stability as they will prevent too much too much internal rotation of the foot
- Interosseus Muscles
  - Muscles in between the bones of the midfoot
  - Aids in abduction (taking leg away from the midline), flexion and internal rotation of the hip

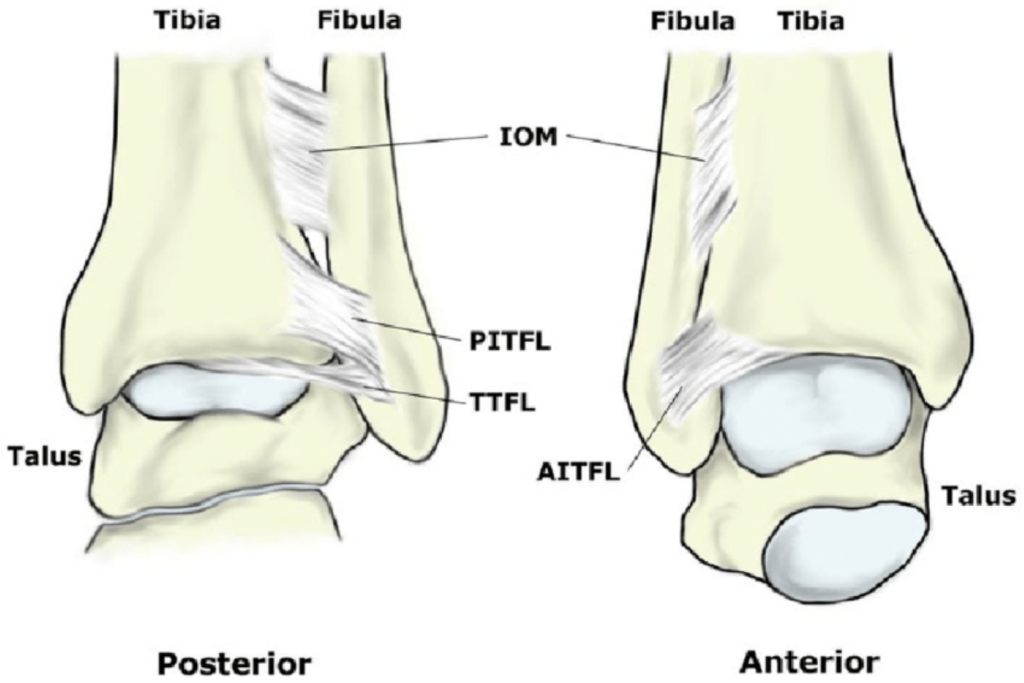
    - Important muscle in stability
- Lumbricals
    - Muscles underneath the metatarsals
    - Aids in flexion of the foot
    - Important in stability

Ligaments of the Foot:

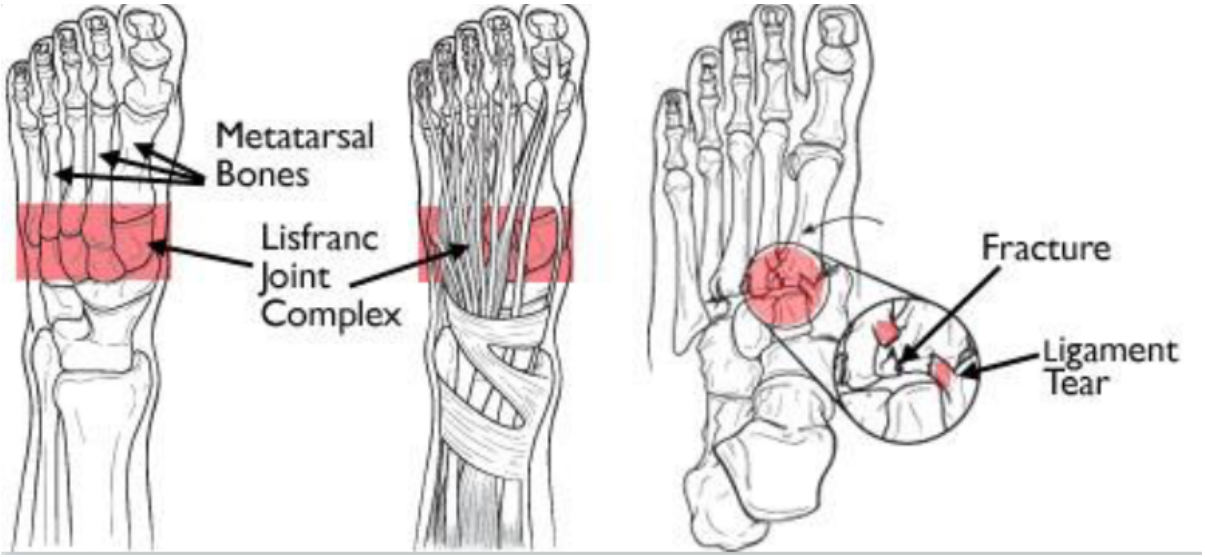
- The Foot and ankle is made up of many ligaments, mainly around the ankle joint. Connecting the shin bones (Tibia and Fibula) tot the top of the foot bones (Talus, Cuboid and Navicular)
- Main Ligaments:
    - ATFL (anterior talofibular ligament)
        - Attaches the bottom front of the fibula to the front top of the talus
        - Prevents too much inward rotation of the front foot
    - CFL (central talofibular ligament)
        - Attaches bottom middle of the fibular to the outside of the talus
        - Prevents inward rotation of the middle-rear foot
    - PTFL (posterior talofibular ligament)
        - Attaches back, bottom of the fibular to the back of the talus
        - Prevents inward rotation of the rear foot
    - Deltoid
        - A triangular formation of 4 ligaments that attach the bottom of the tibia to the navicular, calcaneus and talus.
        - Prevents external rotation of the foot and ankle. Usually quite tough to injure the ligament by itself, will usually tear as a result of a fracture or other big ligament sprain.



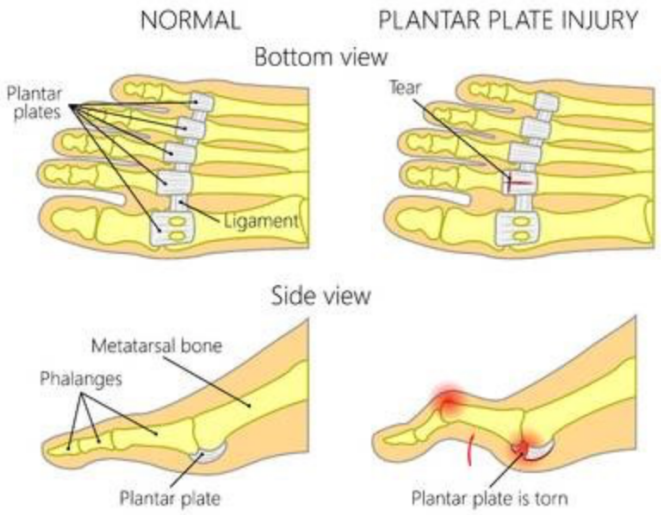
- Syndesmosis
    - Made up of 4 ligaments that attach the bottom of the tibia to the bottom of the fibula
        - AITFL (anterior-inferior tibiofibular ligament)
            - Prevents external rotation of the foot and leg
        - IOL (interosseous ligament)
            - Provides stability between tibia and fibula. Also allows some separation between the two bones to create a spring like effect with push off, with power exercises like running and jumping
        - PITFL (posterior-inferior tibiofibular ligament)
            - Prevents external rot on the foot and leg
        - TTFL (transverse tibiofibular ligament)
            - Provides stability for the foot and ankle joint. Also prevents too much backward movement of the tibia and fibula from the foot



- Lisfranc
    - A joint complex that attaches the midfoot to the forefoot
    - Provides stability to the area
    - Prevents too much forward translation of the midfoot from forefoot
    - Usually injured by forefoot getting stuck and midfoot moving forward



- Plantar Plate
    - Thick ligament that runs along the ball of the foot
    - Prevents the bones from spreading too far apart and overextension of the toes
    - Provides stability to the foot with weight-bearing



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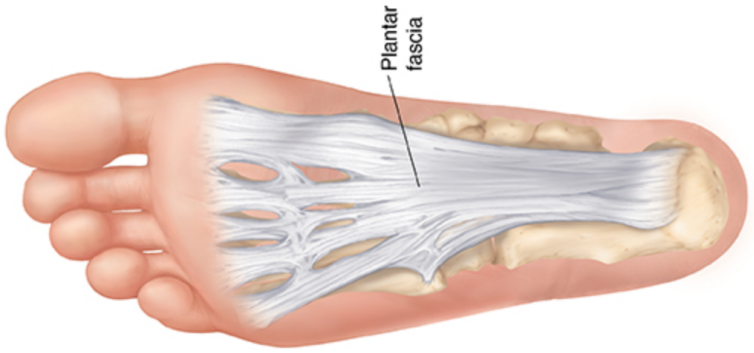
The Plantar fascia:

- The plantar fascia is a layer of connective tissue that runs from the heel to the toes. Its role is to support the arch of the foot especially during the push off phase with walking, running and jumping. The tissue pulls on the heel and if it keeps doing so and starts to get tight, this is when it can get irritated and turn into plantar fasciitis.



The Achilles Tendon:

- The Achilles tendon attaches the calf muscles to the heel bone (calcaneus). It aids in flexing the foot and providing power to propel the body forward / upward in walking, running and jumping. If overused it can create a tendinopathy / tendinitis, which is an irritation of the tendon. The irritation results in inflammation and thickening of the tendon. People will often find discomfort early in the morning and in the cool down period after exercise.

The Achilles tendon

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WEEK 3

Most common sources of foot pain

- Overuse
    - Foot pain can arise with overuse of particular muscles with particular exercises. An example is those who start doing a lot of running in a short time period can result in achilles tendon irritation, due to the spring the achilles needs to provide and it may not have the base strength to provide. This can a similar case with the FHL (Flexor Hallicus Longus), the muscle that connects the calf to the big toe
- Poor biomechanics
    - The way someone moves can drastically affect how their foot responds. If someone has poor technique in jumping and landing this can create an overuse of certain structures and thereby result in pain. Poor landing will usually result in overloading the medial foot
- Poor Footwear
    - Poor shoes is one of the big factors as to why people experience foot pain and ankle pain. People often hold onto a pair of shoes for a lot longer than is intended. In that time, the way one walks can affect the sole of the shoe and as the sole of the shoe starts to wear away this means that more pressure is put onto different parts of the foot and therefore resulting in an overload response.
    - Not getting/wearing the right shoes can also mean an overload response. Those who wear shoes with poor support for activities that require a lot of foot support will create this overload response. For example, wearing shoes that are more associated with leisure for activities such as running or gym.
- Sex
    - Females are more likely to experience different forms of foot pain due to anatomical makeup. Females are more likely to have lax ligaments around the foot and ankle, which will result in greater risk of injuries.
- Age
    - The elder population are more likely to experience plantar fascia pain because of the degeneration of the plantar fat pad (bursa that protects the heel)

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Common Foot & Ankle Conditions

- Lateral Ligament Sprain
    - Refers to the tear/rupture of the outer ankle ligaments that attach the fibula to the talus.
    - Often sprained when someone has too much inward rotation of their foot, otherwise known as ‘rolling’ their ankle.
- Achilles Tendinopathy
    - Usually occurs through overuse with running.
    - The tensile strength of the tendon can not keep up with the load going through it and will become irritated and thicken
- Plantar Fasciitis
    - More common in the elder population due to the degeneration of the fat pad that is under the heel
    - Will come about through a tightening of the plantar fascia, which is usually as a result of a tight/weak calf.
- Syndesmosis
    - A sprain of the one or multiple of the syndesmosis ligaments will usually occur as a result of contact, whereby the foot becomes stuck in a externally rotated position and the lower leg is taken inwards therefore creating a large translation and separation of the ligaments
- Lisfranc Sprain / fracture
    - Will often occur when the forefoot becomes stuck in a certain position and the midfoot continues to move forward and thereby separating the ligaments that combine the two areas.
- Turf Toe
    - Refers to an injury suffered around the plantar complex, this can be the plantar plate or surrounding ligaments. Low grade turf toe is when the complex has been stretched and causes discomfort around the big toe, high grades is a complete tear of the complex and causes a lot of swelling and discomfort. In some cases there can even be a dislocation

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Symptoms of more serious conditions

- Navicular Stress Fracture
    - Will occur when the bone is exposed to a lot of load through weight-bearing activities, so much that so that the cortex can actually crack
    - Due to the poor blood supply to the area it can take quite a long time to recover
    - Symptoms:
        - Will notice a vague, aching pain on the inner slide of the foot near the arch
        - Gets worse with activities such as running, jumping and pushing off movements
- Peripheral Neuropathy
    - Will have a sudden weakness, lack of sensation or lack of reflexes in the foot
    - This can occur with an accident whereby the nerve/s that innervate the muscles around the foot rupture and cause a lack of movement

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WEEK 4

HOW DID I GET HERE???

GENETICS

- Collagen makeup and its importance
    - Hyper-hypo-mobility (water or land body) - group in to hyper/hypo
- Comorbid issues, e.g other joint pathology like FAI, OA, RA, bloodborne inflam, CNS, sympathetic compression
- Remember that there is a management strategy to aid all of the above and cannot be discounted in a treatment program. Is there a missing link to your recovery?

OTHER INFLUENCES

- Habits - posture, biomechanics, funky habits (cross legs etc)
- Loading - alignment and control
- Prevalence of loading
- Beliefs (influence behaviours and nervous system)
- Nervous system sensitivity
- Emotions

What are the top 3 things described above that you feel are contributing to your pain?

_____

_____

_____

Sitting:

How many hours do you sit for in a day?

Breakfast	
Commute to work	
Morning work	
Lunch	
Afternoon work	
Commute home	
Dinner	
Relaxing	
Total Daily Sitting Time	

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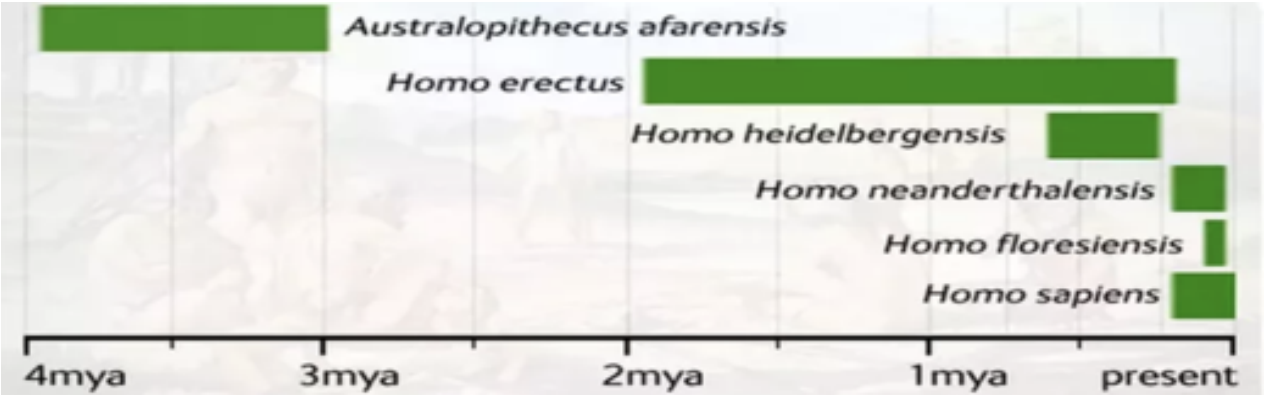

Homosapiens have been evolving for 200,000 years and we have evolved to move! Sitting for more than 4 hours per work day (50% of your work day) and 6 hours in total will wreak havoc on your foot pain and overall health!

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WEEK 5

Pain science

Pain is an unpleasant experience. In fact, it's bloody horrible. But it is actually an incredibly important experience that keeps you safe, informs you about danger and helps you avoid harm. Without pain, you would all be doing crazy and damaging things to your bodies without realizing it. But your pain systems don't always work perfectly.

Pain and the brain

Once upon a time, scientists believed that pain was a message that was sent from our body to our brains, informing us that damage had occurred. What we have now discovered is that these early scientists had it the wrong way around.

It is now well understood that pain occurs *in* the brain. It may be hard to believe, but pain doesn't actually tell you about how much you have damaged your body; it tells you about how much *danger* your brain *believes* you are in. This may be potential danger or real danger.

Persistent pain

In a normal and healthy pain response, all of the elements that make up your pain experience will reverse and return to normal over time, in line with the healing of the injured tissue. But sometimes, things don't behave as they should, and pain persists. There is no simple answer for why this occurs and there are often a number of different factors, each unique to the individual case.

Regardless of the reasons, the fact of the matter is that your danger alert system has malfunctioned. Whilst in a normal scenario, the level of pain will diminish as the injury heals, with chronic pain the level of pain you experience remains the same or even worsens over time, **even if the injured area is healing normally.**

When pain becomes chronic, the pain you feel is no longer an accurate representation of danger or damage in your body.

Summary:

- Pain is an important protective mechanism
- The level of pain we experience is determined by how much danger our brain *believes* we are in
- It does not tell us about how much damage is in the tissue
- Chronic pain is rarely an accurate assessment of danger to the body
- All of the changes in the body associated with chronic pain are reversible

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WEEK 6

Stress & Mindfulness

Below is a list of some of the physical responses that occur during a stress response and the direct impact on pain.

Fight or Flight Response	**Impact on your back pain**
Rapid & shallow breathing	Rapid and shallow breathing results in less oxygen delivery, which then causes the muscles to start tensing up in order to help with lung expansion in an effort to get more oxygen. This results in tight and painful muscles due to overactivity.
Increased muscle tone	The sympathetic response causes muscle tension to assist with running or fighting, but prolonged muscle tone causes pain and impacts bony alignment.
Reduced immunity	Blood and energy is directed to the muscles instead of the immune system (to assist with escaping immediate danger) and this reduced immune energy impacts healing abilities and injury recovery.
Adrenal fatigue	Prolonged release of stress hormones (e.g. adrenaline) causes exhaustion and adrenal fatigue. This reduces tissue healing and also increases pain perception by impacting mood and emotional regulation.
Poor digestion	Similar to the immune system, blood flow and energy is directed to the muscles instead of the digestive system (to assist with escaping immediate danger). This negatively impacts absorption of nutrients and vitamins that assist with injury recovery.
Inflammation	Prolonged stress causes inflammation in the body, creating pain and poor tissue health. Inflammation occurs through poor gut health (due to digestive issues), cortisol and insulin resistance (hormonal issues) and altered immune system responses.
Hypervigilance	The fight and flight response causes increased mental alertness (to detect danger), which makes us hyper-sensitive to pain.

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Questionnaire;

- How do you feel now compared to when you started the program?

- What have you learnt about your body?

- Do you know what makes you feel uncomfortable or what triggers pain?

- Do you have a strategy to make you feel better? Any particular exercise you have learnt so far?

- Is the pain still taking anything out of your life? Do you think you can change this?

- Has anything changed in your life since you started the program in regards to exercise routine, social life, interaction with friends and family?

- Do you feel like you are more in control of your body?

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WEEK 7

Chronic pain and Recurrence

- Chronic pain means pain for longer than 3 months, which means pain that persists after the tissue healing time frame – central sensitization.
- Once the nervous system is sensitized the source of pain is most likely to be at the spinal cord and brain instead of tissue, but any increased load over the previously injured tissue will increase brain alert – pain (recurrency).
- 66% of people with chronic pain will have recurrency.

The most important things to remember if you have a flare up;

- The pain is not necessarily from damaged tissues, but most likely from very a sensitized nervous system. Stay strong and avoid negative thoughts about your body and your life.
- Keep moving to restore muscle coordination and maintain the deep stabilisers working well.
- Think of the exercises we have done together and pick the ones that make you feel the best to use as a 'painkiller'.
- Keep moving and doing things you enjoy as much as possible
- At this point you should be able to identify what causes the flare ups and what normally loads your back.

Exercise progression/regression

- The more you load the more resilient the body becomes
- Neutral spinal before movement
- Supported before non- supported
- Standing – double before single legged
- Drivers and their specific loads
- Range
- Speed

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WEEK 8

History behind Pilates Method

- Created by Joseph Pilates who was born in 1880 in Germany.
- The inspiration for his method came to him during World War One to help with military training, He developed his method for four years, working on his fellow internees.
- He suffered from asthma and rheumatic fever. He managed to overcome his physical limitations by developing his own program of exercise.
- It was initially named ‘contrology’

Principles:

- Breathing: Full consistent inhalation and exhalation helps the circulatory system nourish all tissues while carrying away impurities and metabolic waste.
- Axial elongation and core control.
- Spine articulation.
- Organization of head, neck and shoulders.
- Weight bearing and alignment of the extremities.
- Movement integration

Main goals of Pilates for chronic foot pain:

- Better flow of communication between body – brain and vice versa
- Increase tissue tolerance and resilience.
- Unload tissues and relieve pain.
- Maintain mobility.
- Increase variability – use the same core activation in different positions without sensitizing the nervous system.
- Consolidate posture, movement, function – EVERY REP NEEDS TO BE PRODUCTIVE (precision).

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WEEK 9

SLEEP

Sleep: failing to get 8 hours of good quality sleep every night increases your pain sensitivity, creates inflammation in the body and makes it harder for an injury to heal.

Here are some tips for getting a good night sleep:

1. **Lighting**: You now understand the impact of artificial lighting on your circadian rhythm, so as the sun sets you should dim any bright lights, turn on soft lamps and light candles. Replace any white globes with warm, low intensity globes. This will tell your brain that night time is here and begin melatonin release at the right time, meaning you'll get off to sleep easier. You should also remove any artificial lights from your bedroom such as alarm clocks, and block outside lights with black-out curtains (if you don't have any external street lights then it can be nice to leave curtains open so sunlight enters in the morning).

2. **Reduce screen-time**: If you're really serious about optimising your sleep then you should ideally cut out all computer, smart-phone, tablet and television use at night in order to minimise blue light exposure. If that is unrealistic, apply "night-shift" filters to your devices to minimise blue light exposure. There are also great options for glasses that filter out blue light.

3. **Read a book before bed:** Reading is a very relaxing and therapeutic pre-sleep activity as it can distract your mind from focusing on the stresses in your own life. *How* you read is very important though. One study looked at the impact of 2-hours of reading on a tablet before bed, versus 2-hours of reading a paper book. The results were dramatically different: reading with a tablet instead of a paper book resulted in a 50% reduction in melatonin release, as well as a 3-hour delay in melatonin release and peak. It also took tablet users longer to fall asleep, they had reduced REM sleep, were more tired the next day, and they had an ongoing lag in rising melatonin levels for several days after tablet use ceased (digital hangover).

4. **Temperature**: The optimal room temperature for sleeping is 18 degrees celsius, so if you sleep with air-conditioning then set it to this. You need your core body temperature to cool by 1 degree to initiate sleep, so a helpful trick is to have a *hot* shower or bath just before bed. The body will create an internal cooling response

due to the hot water, drawing blood to the surface of your skin which cools the core body temperature. Having a hot shower or bath before bed makes you fall asleep faster and can give you 10-15% more nREM sleep.

5. **Go to bed and wake up at the same time daily**: Research has shown that this is one of the most important aspects of high-quality sleep. If life permits (e.g. work, kids, commitments), try and match your sleep times to your chronotype (i.e. morning lark, night owl, in-betweener). If you are a night owl, perhaps you can negotiate with your employer about starting and finishing work later, or have a discussion with your spouse about your preference for doing school pick-up rather than drop-off. If you are traveling, taking melatonin supplements as the sun is setting in your new location can assist with jetlag and resetting your circadian rhythm.

6. **Stress management**: Your own mind can be one of your biggest barriers to sleep. Before bed, write down a to-do list for the following day so that you can clear your head for the night. You should then spend 5-10-minutes doing a mindfulness activity like following your breath or doing a relaxing body scan.

7. **Exercise**: There are many benefits to your sleep from regular exercise, such as an increase in deep nREM sleep, improved sleep quality and duration, and reduced time to fall asleep. Sleep also has a big influence on exercise capacity, with poor strength and fitness outcomes after poor night sleep. Sleep and exercise feed each other, with regular exercise leading to better sleep, but good quality sleep also increasing your likelihood of regular exercise due to having more energy. One important tip: don't exercise right before bed as your core temperature will be too high. You should finish training 2-3 hours before bed.

8. **Caffeine**: The half-life of caffeine is 6 hours, meaning half of the drug quantity is still in your system 6-hours after you ingest it (and can take up to 12-hours to completely remove). Given this, you should limit caffeine to before midday, if at all. Try switching to herbal tea or soda water with fresh lemon as an alternative.

9. **Alcohol**: As you now know, alcohol prevents you from entering REM sleep. You should always aim to go to sleep with a blood alcohol concentration (BAC) of zero. It takes approximately 1-hour for your liver to process one standard drink, so if you are having a drink at night, ensure you give your body enough time to clear it from your system before hitting the hay. An even better solution is to swap your wine or beer for a non-alcoholic alternative, at least on the majority of nights.

10. **Diet**: Avoid going to bed too full or too hungry as this can impact sleep quality. A lower carbohydrate diet has been shown to result in better sleep, so reduce your carbohydrate and increase fiber intake at dinner. Getting up to urinate multiple times per night is a common cause of sleep disturbance, so reduce your liquid intake before bed. There are a number of natural herbal supplements that can assist in sleep quality, without the negative side-effects of sleeping pills. I will discuss these in the next section on *supplements*.

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WEEK 10

FINAL NOTES

Congratulations on committing to the program and playing full out. There has been so much information covered over the past 10 weeks. You now have all the resources to:

- Functionally improve your tissue strength - making the injury site more robust
- Activate appropriate core and pelvic muscles to support your foot/ankle
- Understand the biomechanical driving forces which contribute to your pain and pathology
- Understand pain - knowing that pain does not equal tissue injury state
- Create a flow of exercises suited to your foot
- Understand pain relapse and how to work your way back to a functional foot

We have prepared some video resources of individual exercises, as well as flow sets which we think will help you to practice appropriate strategies and find your perfect path with optimal progressions so that you can continue to improve over the coming months.

Please remember that you need to listen to your body and work at a level that is appropriate for you at that time.

ADVANZ EXERCISE LIBRARY:

https://www.ahsmp.com/ahsmp-exercise-library/

Below is a list of our recommended exercises. Please feel free to look through all exercises for an overall great functioning body

- Calf Raise Series
- Jumps and hops
- Lower limb stretches
- Reformer leg series
- Runners lunges
- Early phase mobility and muscle activation
- Standing balance series
- Standing glute series
- Step up series
- Supine core series
- Supine glute series

https://vimeo.com/428967553 (easy to moderate)

https://vimeo.com/423045586/4d6befd5f8 (moderate)
https://vimeo.com/419698057 (moderate to difficult)
https://vimeo.com/416641700/90722b42f3 (moderate to difficult)
https://vimeo.com/410956526/59ee63fb66 (moderate + meditation)