ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

BETTER BACKS PROGRAM

922 Anzac Parade, Maroubra, NSW 2035 | Level 1, 213 Bronte Road Waverley, NSW 2024
ABN: 95 730 992 792 | Phone: 02 8068 7161 | admin@ahsmp.com

BETTER BACKS PROGRAM

Advanz Health specialises in treating back pain. Our Better Backs Program is designed to give you fast relief and long term results for your spine. We use a 5-step approach to a healthy spine, with detailed assessment, accurate diagnosis, scientifically proven treatment techniques and an individualised plan. Our specialised program proves to change the lives of people suffering back pain every day.

STEP 1- COMPREHENSIVE ASSESSMENT & ACCURATE DIAGNOSIS

WEEK 1: 2 PHYSIO SESSIONS

- 1 hour one-to-one assessment where your physio will review your history, read any reports or imaging, assess your body mechanics, posture and function. Using real-time ultrasound technology, we will assess your core muscles. We will also implement early strategies to relieve your back pain.
- Step 1 is important because your physio needs to know what they are treating. Your back pain is NOT the same as the next person and a one size fits all approach does NOT work. Back pain has many causes, and long-term outcomes require accurate diagnosis.

STEP 2- HANDS-ON TREATMENT & EARLY EXERCISE

WEEK 2 & 3: 4 SESSIONS (PHYSIO AND EXERCISE PHYSIOLOGY)

- Your physio will apply hands-on treatment targeted at your specific injury to relieve symptoms and improve your functional movement.
- Using specific hands-on treatment techniques (dry needling/acupuncture, massage, joint manipulation) helps change injured tissue and restore movement quickly. Specific exercise is an essential part of treatment and recovery and improves spinal control.

STEP 3- FUNCTIONAL MOVEMENT AND EXERCISE (ONE-ON-ONE)

WEEK 4-5: 4 SESSIONS (PHYSIO AND EXERCISE PHYSIOLOGY)

- Your physio will work with you to optimise your strength, movement and function relevant to your daily life & sport of choice. Here we change the poor patterns which have caused your injury. This phase is performed one-to-one with your physio/movement-specialist and will strengthen and balance your body.
- Treatment on back pain without specific prescription of exercise is like a bandaid for a broken bone.

STEP 4- SMALL GROUP PILATES CLASSES

WEEK 6-9: 2 CLASSES PER WEEK

- This step creates permanent changes to strength, control and even brain function relating to your body and how it moves.
- Small group strength classes are an incredibly fun and effective treatment to achieve full body results and decreased recurrences of your pain and injury.

STEP 5- COMPLETION

FINAL PHYSIOTHERAPY CONSULTATION TO ENSURE LONG-TERM PREVENTION

- This is your reintroduction to full functional activity. In the completion phase, we get you moving & being better than your pre-injured self, and your physio will help you return to your activities of choice.
- You will be given an ongoing program to ensure long-term spinal health.

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

WHAT YOU WILL GET FROM THE BETTER BACKS PROGRAM

1. A thorough 1:1 extended length physiotherapy session to take an in depth history and objective tests/measures relevant to your individual condition.

2. A differential diagnosis - our therapists will walk you through the most likely pathology creating pain and dysfunction and outline the causation of this pathology - this is very impacting on planning a good recovery.

3. A specific plan of exercises, ergonomic and lifestyle advice, treatment recommendations, individually tailored to your condition.

4. Involvement of a multidisciplinary sports medicine team where necessary to your condition. This may include but is not exclusive to: sports doctor, radiology, nutritionist/Dietitian, specialist orthopaedics. We have very strong associations with the best in Sydney and use them only as required for faster and better outcomes.

5. A team approach where you are cared for in-house by our multidisciplinary team.

6. Progress meetings (weekly) and collaborations by our team specifically meeting about you and consolidating our deemed best course of action for your outcome.

7. Address your pain via education and pain relieving techniques for you to have much better strategies to have a pain free back and spine.

8. Increase the range of joints and length of muscles relevant to your function and improve the biomechanics of your pelvis and spine.

9. Access to our therapists via email or phone for questions during the course of your Treatment.

10. A comprehensive discharge plan to ensure you continue to improve and minimise risk of regression.

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

WELCOME TO THE BETTER BACKS PROGRAM!

ADVANZ HEALTH - who are we?

Our Core Purpose

To transform the health, wellbeing, happiness and human-potential of people globally, through innovative and holistic healthcare

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 back condition:

1. _____
2. _____
3. _____

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

1. _____
2. _____
3. _____

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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 back pain that could be changed through conscious habit shifting)*

"We overestimate what we can do in 1 year and underestimate what we can do in 10"

Back pain…... potentially, overestimate what we can improve in 3 months and underestimate what we can do in 1 year.

OUR EXPECTATIONS OF YOU:

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

ADVANZ HEALTH

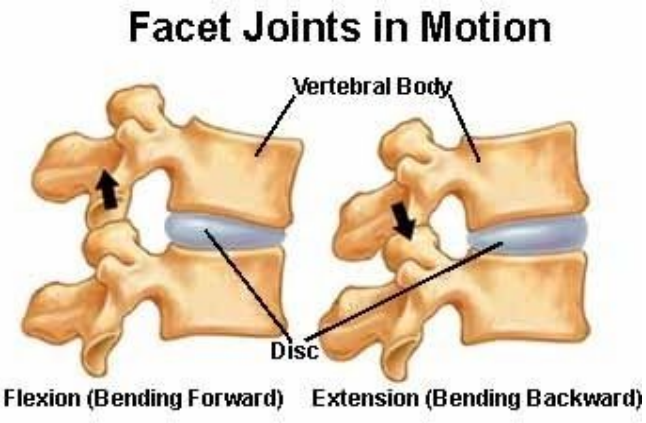
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

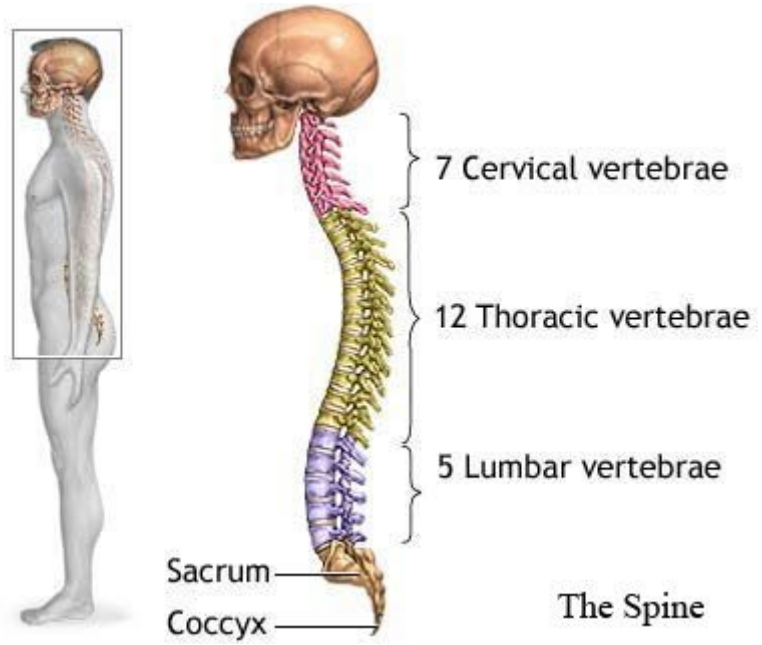
LET'S GET THE ANATOMY OUT OF THE WAY!

Relevant Anatomy and Biomechanical Principles

- The bones in the spine are called vertebrae and in between them are the discs
- Each disc is associated with 2 facet joints behind it - which together make up for an individual motion segment



- The spine consists in 27 vertebrae - 7 cervical (neck), 12 Thoracic (house for the heart, lungs and part of the abdominal contents), 5 lumbar, a sacrum (divided in 5 parts) and the coccyx.



- In between the disc and the facet joints lies the spinal cord.
- Sprouting off from the spinal cord are the nerves, which travel down to the limbs, chest wall and abdomen.

Curves of the spine:

- Cervical lordosis (concave), thoracic kyphosis (convex), lumbar lordosis (concave).
- The curves are natural and very important as a shock absorber and to allow efficient movement.

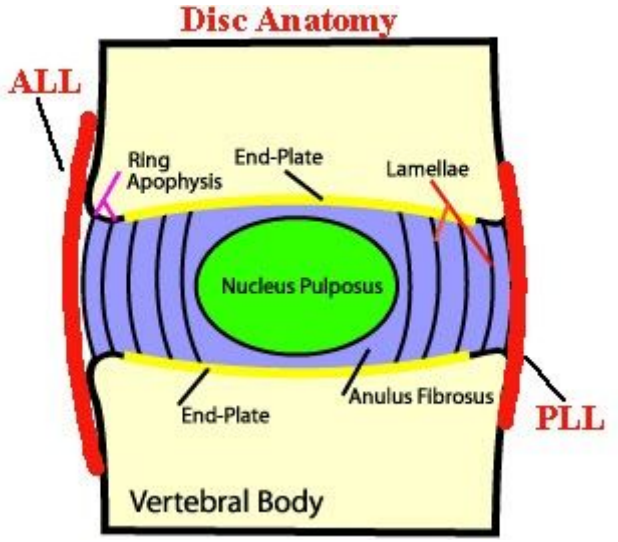
Parts of the spine:

- Cervical
- Thoracic
- Lumbar
- Sacral
- Coccyx
- SIJ - connects the sacrum to each side of the pevis

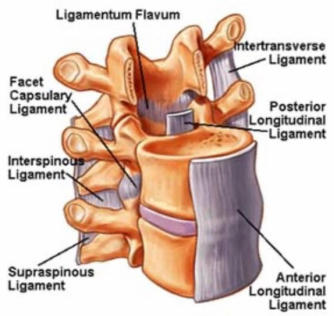
ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

Discs:



- Individually have the ability to absorb impact and allow segmental movement
- They are made of strong fibrous tissue surrounding a tense cushion of water called nucleus.
- Normal movement in the spine occurs over this nucleus. They work with high hydrostatic pressure during spinal movements.
- The end plates attach the disc to the vertebral body and it's made of strong cartilage tissue.
- The Anterior and Posterior longitudinal ligaments (ALL and PLL) and the Ligamentum Flávia are extremely strong ligaments.

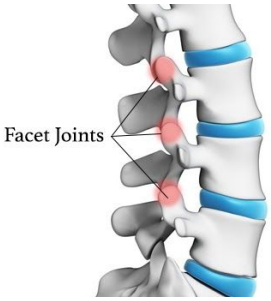


- The discs keep distance between each vertebral body - which keeps neuroforamen open for the nerves to travel.

ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

Facet Joints



These joints are formed at the back of each vertebral body. Facet joints help the spine to bend, twist, and extend in different directions. The facet joints restrict excessive movement such as hyperextension and hyperflexion (i.e. whiplash). Each vertebra has two facet joints. Like other joints in the body, each facet joint is surrounded by a capsule of connective tissue and produces synovial fluid to nourish and lubricate the joint. The surfaces of the joint are coated with cartilage that helps each joint to move (articulate) smoothly.

Spinal cord and nerve roots

- Cylindrical structure about the diameter of the little finger.
- Contained and protected with the spinal canal
- Begins below the brain stem and extends to the first lumbar vertebrae (L1).
- Nerve roots exit the spinal canal through the intervertebral foramen.
- The brain and the spinal cord make up the *Central Nervous System (CNS)*
- Nerve roots form the *Peripheral Nervous System (PNS)*

Type of Neural Structure	Role/Function
Brain Stem	Connects the spinal cord to other parts of the brain.
Spinal Cord	Carries nerve impulses between the brain and spinal nerves.

Cervical Nerves (8 pairs)	These nerves supply the head, neck, shoulders, arms, and hands.
Thoracic Nerves (12 pairs)	Connects portions of the upper abdomen and muscles in the back and chest areas.
Lumbar Nerves (5 pairs)	Feeds the lower back and legs.
Sacral Nerves (5 pairs)	Supplies the buttocks, legs, feet, anal and genital areas of the body.

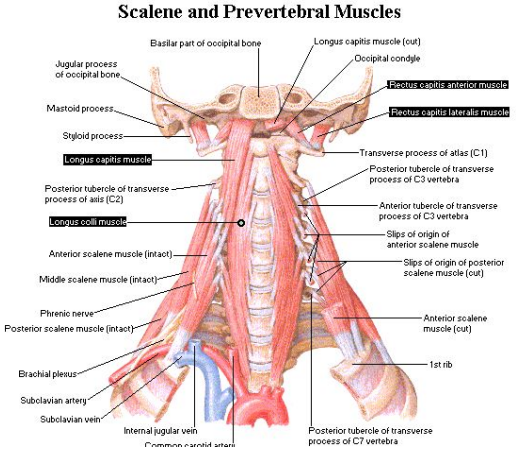
Tendons and Muscles

- Tendons attach muscles to bones.
- Muscles provide spinal support and stability to flex rotate or extend the spine.
- Fascia is a strong sheath-like connective tissue that supports the muscles.

Key muscles responsible for spinal stability

Deep neck flexors

Stabilize the neck and prevent forward head position



Upper Traps

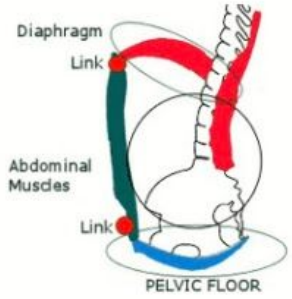
Gets bad reputation and tends to be blamed and ‘tight’.

Usually overworked from lifting our arms and overstretched by poor howard head posture, resulting in pain and tension.
Really important muscles to support shoulders and neck.

Breathing muscles

- Scalenes and SCM: often get tight due to shallow breathing. Can cause tension in the neck, jaw,headaches and pins & needles down the arm.
- Intercostals: between the ribs, help expand and shrink the chest cavity to facilitate breathing.
- Diaphragm: attaches to the bottom of the sternum, last 2 ribs and lumbar spine.

Deep core muscles



Made up of five muscles that lie below your abs and wrap around your midsection like a corset, connecting to your spine. These muscles are transverse abdominis, multifidus, pelvic floor and diaphragm.

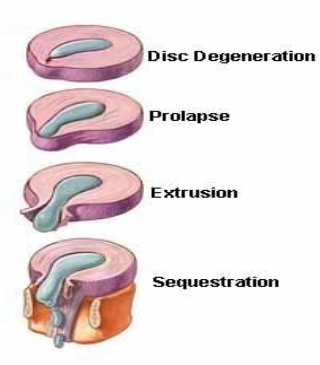
- Transversus abdominis: big corset like muscle that attaches to the bottom ribs, pelvis and lumbar spine. Help supporting the spine.
- Multifidus: found on either side of the vertebral column, extending from the cervical all the way to the lumbar spine.
- Pelvic floor: 'sling' of muscles, a bit like a small muscle hammock that runs between the pubic bone in the front, and the tailbone at the back.

ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

Most common sources of back pain

Disc conditions



- Annular tear/strain: strain in the 'rings' of the disc. Pain is usually felt in one side of the neck/scapula or lumbar/buttock and worse with sitting, bending, twisting.

- Disc prolapse/protrusion/bulge: increased pressure into the disc causing pain usually on one side of the neck/scapula area or lumbar/buttock area. Normally worse with sitting, bending, twisting.

- Disc herniation: jelly-like center of a disc can break through the tough outer layer and irritate a nearby nerve root. Pain is usually excruciating in the neck/scapular area or lumbar spine and typically radiating down to arm or leg.

- Facet joint dysfunction: strain or compression of the joint resulting in inflammation/irritation. Pain usually described across the lower back, worse with extension and rotation.

- Sacroiliac dysfunction: inflammation caused by too much or too little motion in the joint

- Spinal stenosis: narrowing of the spinal canal, can be central, -foraminal or both. Pain in Lumbar or both legs with walking, standing, bending backwards.

- Spondylolisthesis: when one vertebra slips over the adjacent one. The most

common cause is secondary to a defect or fracture of the pars (between the facet joints). Pain is usually worse with standing, bending backwards.

- Radicular pain/sciatica: Nerve root compression or irritation that results in arm/leg pain, typically one side

- Radiculopathy: Nerve root compression or irritation that results in tingling, weakness, and/or numbness that radiates down to arm/leg

- Neurogenic claudication: Spinal cord compression that causes a symmetrical pattern of pain affecting both legs while walking or standing for a long period of time.

Symptoms of more serious conditions

Bowel/bladder dysfunction, numbness in the saddle area, unexplained and rapid weight loss.

Don’t panic

- While some episodes of low back pain can be severe and frightening, most people recover from the episode reasonably quickly (within six to eight weeks).

- If you have experienced an episode of low back pain in the past, you will probably experience low back pain again.

- Figuring out and understanding the triggers for the low back pain and what you should and should not do is more important than trying to prevent ever getting low back pain.

- Strong evidence shows that serious disease is present in only approximately 1% of people with back pain and a scan is only essential if it is suspected that the person is in this small group.

- Invasive treatment like surgery is rarely an option for back pain.
- Don’t be put off by medical jargon and opinions. Research has clearly shown

that discs, bones, joints in your back do not go “out of place” or “slip”. The discs are firmly attached between the back bones (vertebrae) and cannot “slip” out of place.

- Don’t worry about what you see in MRI reports. The scan reports will always show “stuff”, but much of it can be poorly linked with pain. Research has shown that people who don’t have low back pain have disc bulges, disc degeneration, disc protrusions and facet joint degeneration. These things are normal parts of the aging process- like grey hairs or wrinkles.
- Remember it is the person and needs treatment not just a spine. Each person’s low back pain story will be different and involve different mixes of factors.

Breathing Exercise

Lie on your back with legs bent.

1. Breath in and send the air towards your tailbone
2. Continue to breath and feel the air travelling up the back of your ribcage to lift the ribs off the hips
3. Breath out and pull and pull your lower abs up towards your bottom back ribs.
4. As you finish breathing out, allow your shoulder blades to relax and feeling the lengthening of the back of your neck and upper back

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

My current motivation to actively seek positive change in my pain and dysfunction is

/10

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?

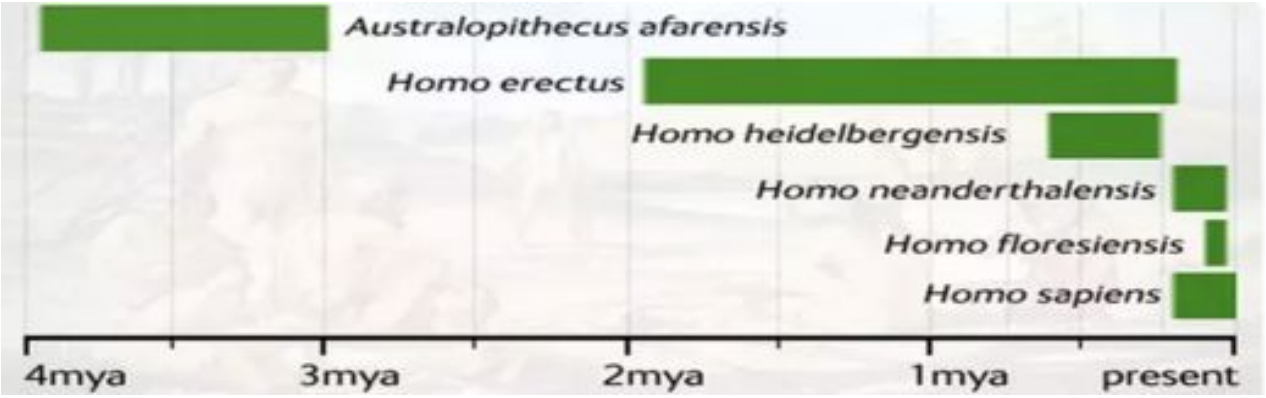
Breakfast	
Commute to work	
Morning work	
Lunch	

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

Afternoon work	
Commute home	
Dinner	
Relaxing	
Total Daily Sitting Time	



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 back pain and overall health!

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

Pain science

Pain:
Scans do not correlate well with pain

Systematic Literature Review of Imaging Features of Spinal Degeneration in Asymptomatic Populations

W. Brinjikji, P.H. Luetmer, B. Comstock, B.W. Bresnahan, L.E. Chen, R.A. Deyo, S. Halabi, J.A. Turner, A.L. Avins, K. James, J.T. Wald, D.F. Kallmes, and **J.G. Jarvik**

	Age (yr)						
Imaging Finding	**20**	**30**	**40**	**50**	**60**	**70**	**80**
Disk degeneration	37%	52%	68%	80%	88%	93%	96%
Disk signal loss	17%	33%	54%	73%	86%	94%	97%
Disk height loss	24%	34%	45%	56%	67%	76%	84%
Disk bulge	30%	40%	50%	60%	69%	77%	84%
Disk protrusion	29%	31%	33%	36%	38%	40%	43%
Annular fissure	19%	20%	22%	23%	25%	27%	29%
Facet degeneration	4%	9%	18%	32%	50%	69%	83%
Spondylolisthesis	3%	5%	8%	14%	23%	35%	50%

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.

ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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 around the spine 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.

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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?

ADVANZ HEALTH
SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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 back 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).

ADVANZ HEALTH

SPORTS MEDICINE | PHYSIOTHERAPY

HEAL FAST. HEAL SIMPLY. HEAL HOLISTICALLY.

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 travelling, 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*.

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 spine
- 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 back
- Understand pain relapse and how to work your way back to a functional back

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 greta functioning body

- Adductor holds
- Lower limb stretches
- Prone core series L1
- Prone core series L2
- Prone Kneeling series
- Runners lunges

- Side plank series
- Side lying glute series
- 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)