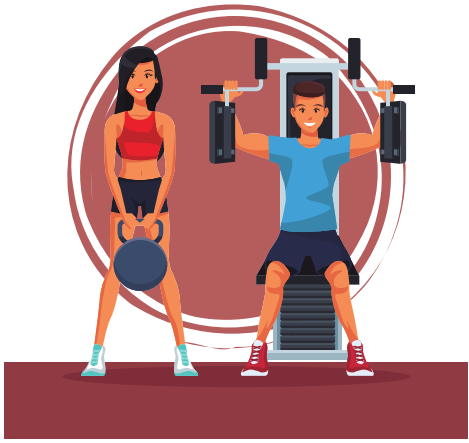
ClinicalPhysio

Exercise Prescription Case Studies



Khalid Maidan

Specialist MSK Physiotherapist

Introduction

What do we need to consider when prescribing exercises?

What pathology?

How much pain?

How used to exercise are they?

How ready are they to exercise?
Motivation vs. Fear?

What is painful?
Which areas?
What is not painful?

What has been their experience with exercise/physio in the past?

Considerations

What is the aim of the exercise?

Reps and Sets?
Frequency?

Is there a protocol?

What time and ability does the patient have to do them?

Who has control over the exercise?

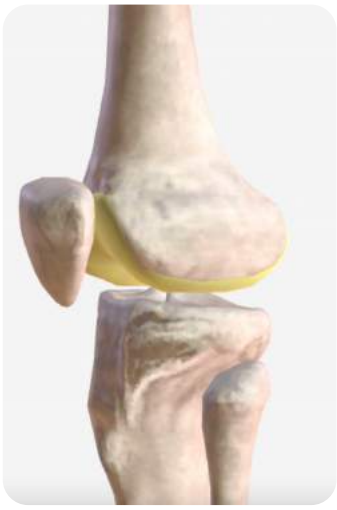
Does it mean something to them?

Is it easy to progress?

Applying those Considerations in Practice!

The aim of the case studies is to get you to think about some of these key considerations when you apply them to your patients!

Case Study 1

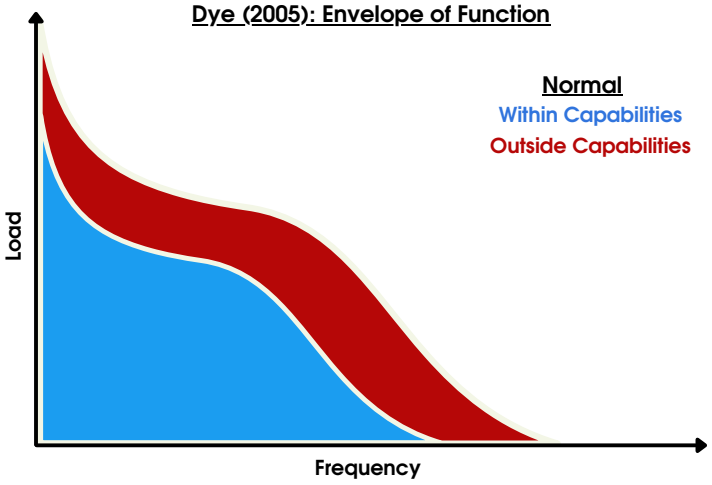


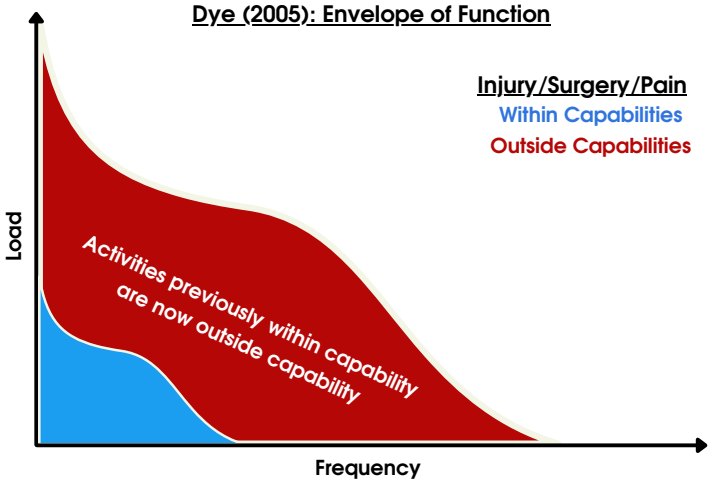
22 year old female: Right Knee Patellofemoral Pain

- Fell directly onto her right knee playing netball 6 weeks ago
- Concerned not getting better yet
- Read about doing Squats online and now even more sore

- No swelling, bruising, deformity
- Able to fully flex her knee, extension painful end of range
- Very weak quads and painful to do single leg activity
- Walking with a limp with no aids

What is important to consider for your exercises?





N.B. Point of Patella engaging with Trochlea

The Envelope of Function is a really important concept when it comes to Patello-Femoral Pain. It highlights that we should be working with patients on exercises which are within their envelope of function, and that as they improve, their envelope (in blue on graph) will grow back to its previous levels. Thus you may notice how the exercises I have used "start slow" and then build up, to make sure they are within my patient's envelope of function.

Case Study 1

Exercise Ideas

Early

- Static Quads into a Rolled Up Towel
- Straight Leg Raise (SLR)
- Progress SLR into Inner Range Quads (IRQ)
- Weight-Bearing: Staggered Sit to Stand --> Sit to Stand

Mid

- Staggered Sit to Stand in favour of painful leg
- Single Leg Bridge: Progress to Off Step
- Single Leg Press (Easy to progress and regress)
- SQUATS?!?!

Other considerations

- Don't want to move too far out of envelope of function
- A little scared?
- Quite sore
- Need to get good Quads Control first

Therefore...

SQ into Rolled Up Towel
5 Second Hold
Start with 6 x 2 with Quality
Build to 15 x 2

Straight Leg Raise
Start with slightly flexed knee if REALLY needed
Start with 6 x 2 with Quality
Build to 15 x 2

Staggered STS
Painful leg forward
8 x 2
Aim to move painful leg back

As things get better...

- More Weight Bearing
- Increase Reps - need PFJ to feel more comfortable with repetition
- Challenge Flexion-to-Extension Movement
- Still thought process on not over-aggravating
- For Netball: Squatting, Jumping, Landing, Changing Direction

Case Study 2

36 year old male: Right Achilles Tendinopathy

- Clear and diagnosed Achilles Tendinopathy
- Started running 10-12km per run as looking to build towards half marathon (previously only 4-5km per run)
- Not majorly painful, but struggling to progress running
- Now running 3km at a time, which is "OK... still a bit sore next day"

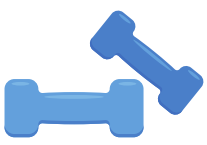
- No major concerns on regular objective assessment
- Single Leg Heel Raise Capacity: Left = 30, Right =11

What is important to consider for your exercises?

Exercise Ideas

You may well find in practice that Calf/Heel Raises are the number 1 exercise used, and that variations of these can be very effective.

- Isometric Research is not that conclusive
- Heavy Loading seems to be preference
- Insertional vs Mid-Portion Achilles Tendinopathy
- Double Leg --> Right Leg Bias --> Single Leg Only
- Plyometric in time?



- Other Options: Jumping, Single Leg Squats
- Need to factor in Running Programme as Loading

Case Study 2

Therefore...

Rep Max Progression

- **Week 1: 15 Rep Max**
- **Week 2-3: 12 Rep Max**
- **Week 4-5: 10 Rep Max**
- **Week 6-8: 8 Rep Max**
- **Week 9-12: 6 Rep Max**

- **4 sets/session, 3 times/week, for 12 weeks**
- **6 Seconds per rep (3 Conc, 3 Ecc)**

(Kongsgaard et al, 2009)

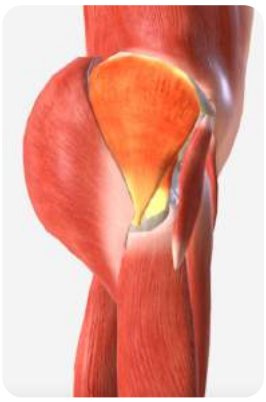
As things get better...

- Heavy Weight
- Plyometrics E.g. Heel Raise Jumps, Lunge Jumps
- Running Programme:
  - Quite Simply - keep measuring Single Leg Calf Capacity
  - Progress running distance in line with this and symptom reporting

Case Study 3

36 year old female: Left Gluteal Tendinopathy

- 9 month history of Gluteal Tendinopathy
- Very irritable, struggling to sleep, stressed as single mum with 2 teenage children
- Struggling with work standing at reception, but has to work for income
- Had physio 6 months ago but made it worse. Had steroid injection which helped for a month but then started getting worse again.



- No major concerns on regular objective assessment
- Weak Gluts Left Leg

What is important to consider for your exercises?

What are we actually treating here?

Imagine you had a bad experience eating Sushi, or flying with a certain airline? Would you consider doing those things again, or would you be against it?

Our patient is exactly the same... she has had a bad experience previously with physio! So how hard and how much will we have to focus on getting her believing in physio again in order to exercise... and how do we incorporate that into our exercises?

How do we do this with our Patient and Physio?

Listen to what is concerning them **Repeat it back!**

"Here is what **WE** will do **DIFFERENTLY**..."

Give the patient **options**, **choices**, and **ability to change**

Case Study 3

Exercise Ideas

- Try a variety of things at whatever level/intensity you see fit
- "Which **1-2** of those did **you** prefer/would work best for you?"
- "How many times **do you think you could do it**?"

Therefore...

- Pelvic Tilts
- Isometric Hip Abduction Supine: Short Lever --> Long Lever
- Bridging: Double Leg --> Staggered Leg --> Single Leg
- Sit-to-Stand with Theraband pushing into Abduction
- Something Less Gluts Focussed E.g. Leg Press with Theraband
- Abduction against gym ball against wall
- Squats with hips in abducted position

How Often? How Many? Patient Choice!

"Questions are the Answers!": by getting our patient to be able to give us the ideas on what she thinks is the right number of reps and sets, we are more likely to get a figure which she can do and thus actually complete in line with her rehab.

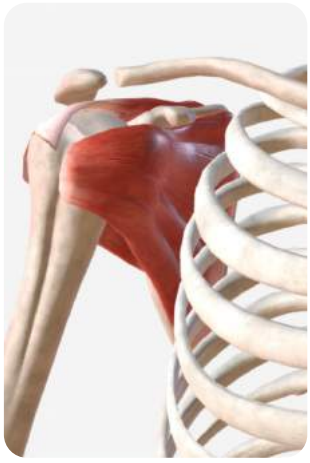
As things get better...

- Start without Hip Adduction, but gradually phase it in
- Crab walking, Monster Walks
- More Single Leg Activity e.g. Lunge, Single Leg Stand, Single Leg Step Up
- For our Lady: Slow progressions, ensure comfortable at each stage
- Her main goal is standing: So focus on that

Case Study 4

48 year old male: Right Rotator Cuff Tendinopathy

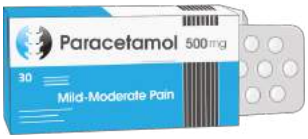
- Works as a Window Cleaner, Irritable Rotator Cuff Tendinopathy Dominant Hand
- Not sure what to do, but now off work
- Difficult lifting or loading through his right arm
- Currently just doing pendular exercises

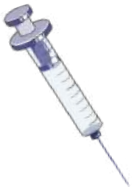


- No neck, elbow, hand/wrist, neural issues
- Active Flex 90°, Abduction 60°
- Active Assisted Flexion 110°, Abduction 70°
- Resisted Rotator Cuff 4/5 and Painful

What is important to consider for your exercises?

Relevant Considerations and Ideas Surrounding Rotator Cuff Tendinopathy...





Shoulder joint is one of the most common places for CSI to be utilised despite lack of evidence

"Pain reduction is a priority in managing irritable RC tendinopathy"

(Lewis et al, 2015)

- **Evidence on Isometrics is very variable**
  - Lewis et al, 2015: Maybe
  - Parle et al, 2016: Yes when combined with ice (pilot study)
  - Clifford et al, 2020: No (systematic review: studies assessed had poor evidence)
- I often use **Symptom Modification** with these patients to see what works for them
- **General loading programme within pain levels** is currently most effective treatment
- Involving **lower limb** in exercises is beneficial for activating the whole chain

Case Study 4

Exercise Ideas

Active Assisted Exercises which are within pain levels: Start to include RC Activation in these

Table Slides: Flexion and External Rotation

Flexion

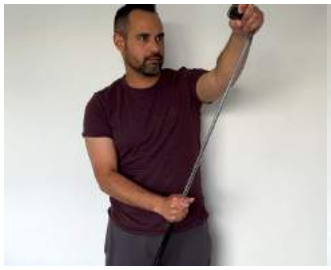
External Rotation

Cradle Exercises

Flexion

Progressed Table Slides

Stick Assisted: Flexion and Abduction

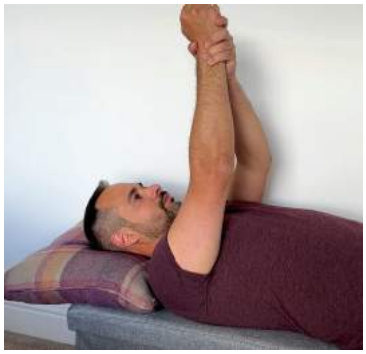


Flexion

Abduction

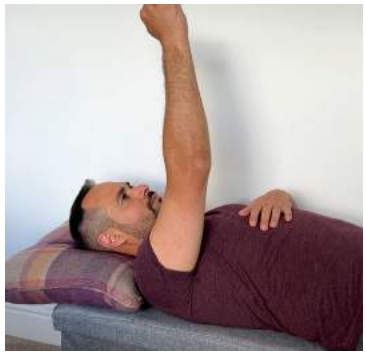
Active Assisted Wall Slides

Supine Exercises (similar to Anterior Deltoid)



Short Lever to Long Lever Active Assisted Punch

Active Short Lever Flexion

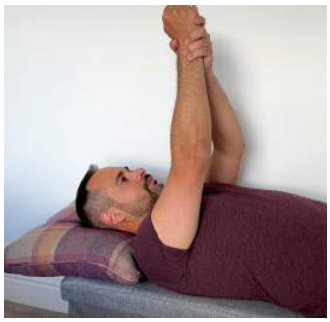


Active Long Lever Flexion

Case Study 4

Therefore...

- Table Slides (or if comfortable A.A. Wall Slides) 8 x 2-3
- Short Lever to Long Lever A.A. Punch (Supine) 8 x 2-3
- A.A. Short Lever Flexion (Supine) --> Active Short Lever Flexion 8 x 2-3


As things get better...

Start Loading in line with pain levels!


The Rotator Cuff works as a Dynamic Stabiliser during MOST Shoulder Movements!

Add Lower Limb?




Case Study 5

29 year old female: Right ACJ Pain

- Fall off bike 3 weeks ago
- Pain clearly highlighted at ACJ, no other shoulder pain
- Neck moving fine
- Confirmed: No fracture via XR

- Clear pain at ACJ with 100° elevation of shoulder
- Not particularly worried, just wants to know what to do

What is important to consider for your exercises?

What happens to the ACJ in movement?

- Rotate and Glide to allow for Arm Elevation
- Needs to be able to tolerate Upper Limb Weight Bearing

Therefore we need to consider...

- Upward/Lateral Scapula Rotation
- Shoulder Elevation
- Element of Weight Bearing Exercises

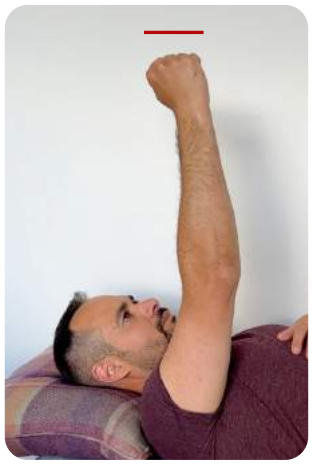
Case Study 5

Exercise Ideas: Upper Traps

- Simple Shoulder Shrugs
  - ? Unilateral
  - ? Supine
- Monkey Shrugs
- Prone Y lift
  - Progress slowly starting with perhaps not much beyond 90° and no weight

Exercise Ideas: Serratus Anterior

- Khalid's "One inch Punch"
- Push Up Plus: Can start with Wall
- Forward push with theraband



Exercise Ideas: Weight Bearing

- Hands on table: Slowly move forwards and backwards
- Walking hands on table
- Wall push up
- Progress Wall Push Up to Work Surface Push Up

Case Study 5

Therefore...

Start with high repetition with lower load

- One inch punch - 15 x 2
- Monkey Shrugs - 15 x 2
- Hands on table: Forwards and Backwards - 60 seconds x 2

As things get better...

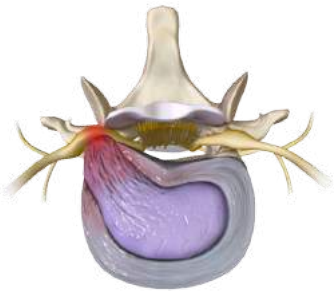
- Prone Y Lifts with Weight
- Shoulder Press
- Press Ups
- Bear Walks
- And Don't Forget the Lower Limb for Shoulder Rehab!!

Case Study 6

52 year old male: Low Back Pain and Sciatica

- Office Worker: Does a lot of sitting, and struggling to sit at work due to Low back pain and left sided sciatic symptoms
- Taking cocodamol but not helping, VAS 7-8/10
- Not necessarily scared, but doesn't know what to do

- No red flags, myotomal, dermatomal or reflex changes
- Straight Leg Raise: Left Leg 30°
- Flexion: Reaches Knee - increased Pain
- Extension: 3/4 ROM, less painful, ? relieves it



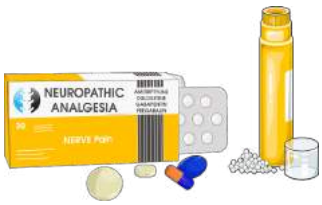
What is important to consider for your exercises?

What are some of the key themes now for Sciatica Rehab

Depends on Irritable Sciatica vs Post Irritable Sciatica

Tom Jesson - "Forget about stability, Focus on nerve health"

- **Reassurance and Non-Threatening Language**
- **General and Manageable Movement**
- **Neuropathic Analgesia**
- **Calming down measures**



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- **Sliders and Gliders: If really irritable... No!**
  If people don't have raging sensitivity ... Maybe

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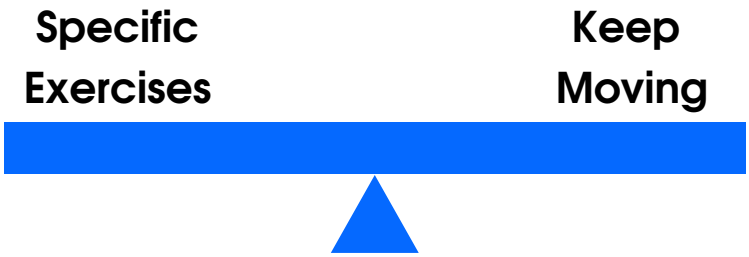
- **Glute Strengthening**

Case Study 6

Exercise Ideas



Evidence does not necessarily suggest that we must be using specific strengthening or motor control exercises, and that actually, just making sure that we keep moving may well be the most important thing. So how do we approach this with our patient... Again, patient choice is key as they may be more likely to do it

- Have you been exercising **before now**?
- What is **important** and **meaningful** to you?
- What do you feel **ready** to do?
- What feels **comfortable or tolerable** for you?

Exercise Ideas: What direction do they find comfortable?

Flexion Preference?

- Knee Hugs: Single Leg or Double Leg?
- Reach forward whilst sitting
- Leg rolls in supine (with knees bent)
- Prayer Stretch / Child's Pose
- Hip Hinges: Flexion but element of Extension

Extension Preference?

- Pelvic Tilts
- Bridging vs Segmental Bridging
- Hip Thrusts as progression of bridging
- Sit-to-Stands

Case Study 6

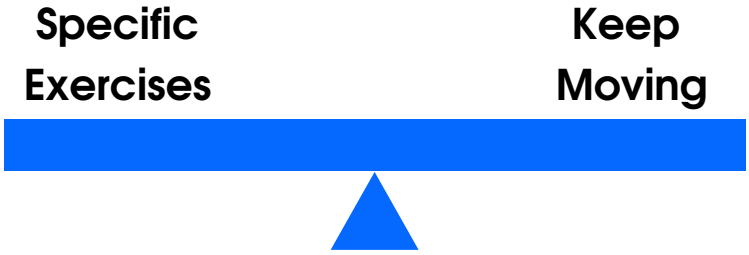
Therefore... (because our patient has an Extension Preference)

- Pelvic Tilts: 30 seconds, twice a day
- Bridging vs Segmental Bridging: 30 seconds, twice a day
- Hip Thrusts as progression of bridging: 30 seconds, twice a day
- Sit-to-Stands: 30 seconds, twice a day

As things get better...

- Squats
- Supported Rows
- Hip Extension in All 4's or over a table
- Deadlifts
  - Regular Deadlift
  - Romanian Deadlift
  - Single Leg Deadlift

But once again, this is critically important for these patients...



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