

A decorative graphic on the left side of the slide consisting of two overlapping parallelograms. The front one is blue and the back one is a light green. They are positioned diagonally, with the blue one partially covering the green one.

Late to Return to Play for a Pectoralis Major tear

By Trystan Nunes

What is the Pectoralis Major?

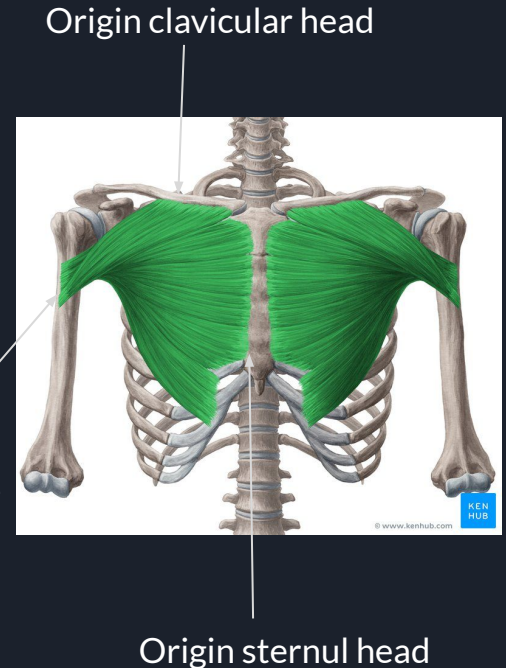
Where does the pectoralis major originate and insert?

How does it move and what movements does it create?

Sporting movements that involve the pectoralis major

2 Main mechanisms of injury and duration of recovery

(Durant and De Cicco, 2021) (Kakwani *et al.*, 2006)





Signs and Symptoms RTP time Frame for Pectoralis Major Rupture

Signs and Symptoms

A nipple dropped more than the opposite side

Deformity of the pectorals

Weakness and Pain in Adduction and External Rotation

RTP Time Frame

5-6 Months early RTP

6+ Months for re-assured RTP

(Parnes and Tomaino, 2021)



Progressive Strengthening & Exercise Selection in Late-Stage Pectoralis Major Rehab

- Progressive Strengthening is essential during Rehabilitation for the Pectoralis Major in the Late/Return-to-Play (RTP) Phase.

What are the key goals in the late/ RTP phase:

- Rebuilding Strength & Hypertrophy
- Developing Power & Speed
- Enhancing Neuromuscular Control & Stability
- Incorporating Sport-Specific Movements
- Highlight how different exercises can achieve similar rehab goals

(Yu *et al.*, 2018) (Agarwalla *et al.*, 2021)



Exercise selection

Research-Based Rehabilitation: Selecting Exercises for Return to Play and Early vs. Late-Stage Recovery (Sara and Lewis, 2023)

What are the key components when considering RTP rehabilitation?

- Power
- Strength
- Endurance
- Hypertrophy
- Neuromuscular Control & Stability

Eccentric Control & Injury Prevention (Lepley *et al.*, 2017)

Sport-Specific RTP

Bench press

- What are we trying to target?
- 3-5 reps 80% of 1 rep max (Schoenfeld *et al.*, 2021)

How do we perform a correct bench press? (Graham, 2003)

Bar and Set-Up Position:

Grip & Alignment:

Unrack & Start Position:

Lifting phase:

Supine position, lie flat on a bench.

Hold the bar close pronated grip

Unrack elbows at 10°

Decent (Ecc)
Controlled
Avoid bounce

Eye in line with barbell

Grip width keep forearms
vertical, elbow under bar

In nipple line

Ascend (Con)
Up and slightly back
Controlled
Fully extend non aggressively

Equally loaded and clipped

Straight and firm wrists
preventing needless strain.

Key points:
Keep scapula
retracted

Concentrate on
breathing and
control

Progression and
Regressions



Med ball catch and throw

- Aiming to work on Plyometrics, Accels and Decels
- 8-12 reps 3-6 sets Around 75% of 1RM (Sayers and Lorenzetti, 2019)

How to do a correct Supine med ball catch and throw Johnson et al. (2024)

1. Set up

Lie flat on mat
Knees bent and feet firmly planted
Glutes and lower back stay in contact
Core tight

2. Declaration phase

Extend your arms in front of you
A partner standing to one side tosses the med ball toward your **outer shoulder**.
As the ball comes in, absorb the force by catching with both hands
Don't let the ball yank you
Control the deceleration
Rotate slightly through trunk

3. Power/Accel phase

Using your pecs, core, and arms, explosively rotate and throw
To a second partner standing on the opposite side.
Keep the movement powerful but controlled, and ensure you're not overcompensating through the lower back.



[Link to Rugby- Pass & Hand off](#)

Progression- Lying on exercise ball
Regression- Vertical drop and pass

Kneeling incline bodyweight catch

- Aiming to work on fall landing mechanics
- 8-12 reps, 3-4 sets

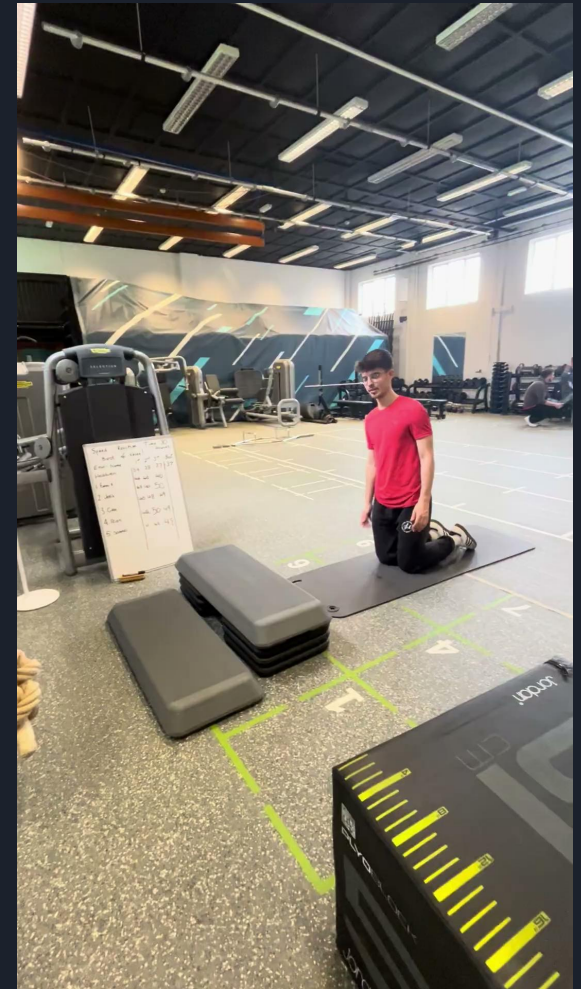
How to execute a correct kneeling incline bodyweight catch

- Start position: Kneeling
- Fall phase
- Catching phase

[Link to Rugby](#)

Progression- Landing on a bosu ball

Regression- Falling into a wall standing, lowering the incline



Press ups

Aiming to achieve hypertrophy

6-12 reps, 60 seconds rest (Krzysztofik *et al.*, 2019)

How to perform a press up (Ebben *et al.*, 2011)

- Start in a high plank - hands slightly wider than shoulder width body in a straight line from head to heels.
- Engage your core and glutes keeping your body stable.
- Lower your chest controlled and slow, bend your elbows, keep them close, and lower until your chest nearly touches the floor.
- Pause briefly at the bottom.
- Push back up to the starting position, keeping everything tight and controlled.

Link to Rugby

Progression- Elevated handles allowing for more depth, clap push ups

Regression- From a kneeling position



Lateral Plank Switch over hurdle

Enhances neuromuscular control (Saki *et al.*, 2023)

3 x 8-10 reps

How to execute a lateral plank switch (Tvrdy, 2012)

- Set up:

Low hurdle on side

Side plank position

- Control:

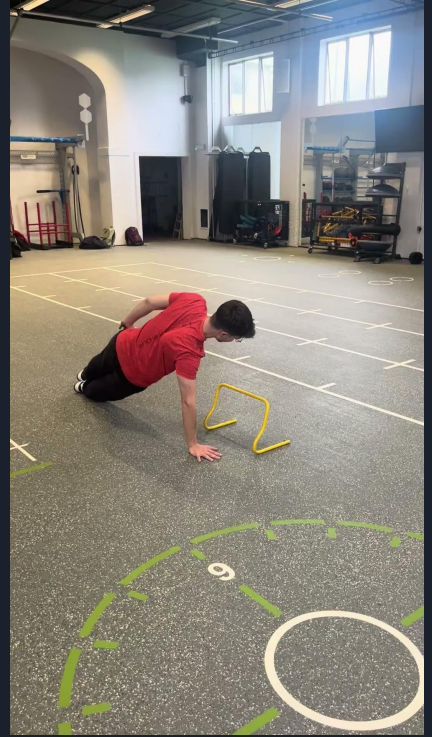
Engage core and glutes
keepin body aligned

Reaching towards ceiling
with other arm

- Transition:

Rotate through core into
high plank

Rotate with core into
side plank on opposite
side



Progressions - Higher hurdle

**Regressions- Prone plank
side taps**

Acceleration and Deceleration

- Accelerations should be targeted first before Deceleration as more load is put through the joints on the deceleration phase when considering lower limb injuries, starts with jogging and Gradual increases in speed of 5% (Delaney *et al.*, 2016)
- Sport Specific Drills to Rugby



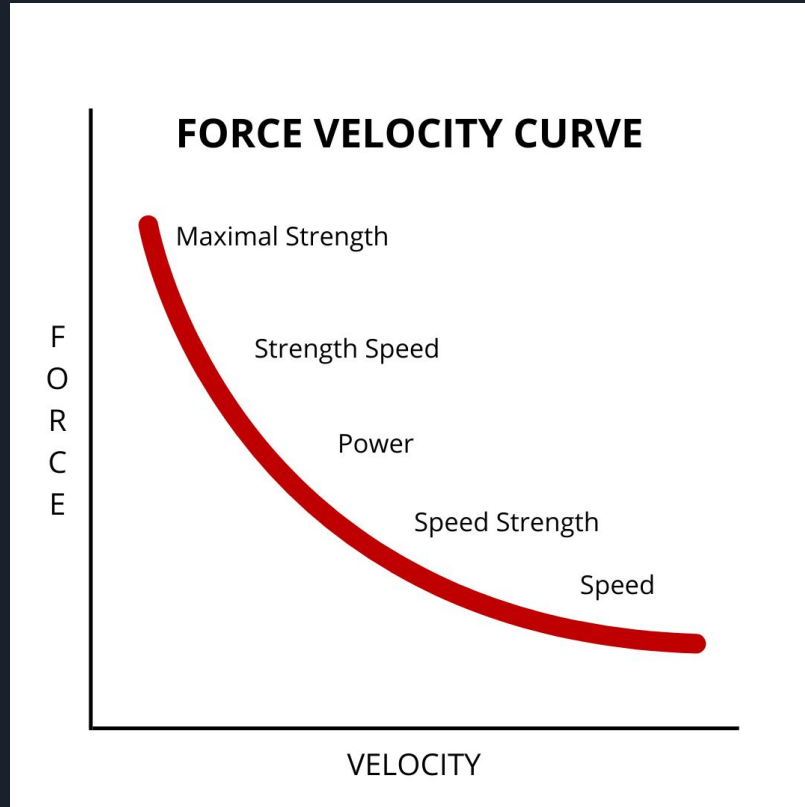
Force Velocity curve

High force, low velocity

Low force, high velocity

Start with controlled
strength work

Aiming to progress towards
more explosive work



Maximum strength 90-100% of 1RM

Strength Speed 80-90% of 1RM

Peak Power 30-80% of 1RM

Speed Strength 30-60% of 1RM

Speed <30% of 1RM

(Devrome and MacIntosh, 2018)



RTP Criteria

Criteria for progression

- Sufficient strength standards
- Good movement quality (Hickey *et al.*, 2017)
- Pain free ROM

Reducing the risk of re-injury

- Subjective assessment (Saw, Main and Gustin, 2015)
- Gradual loading (Impellizzeri *et al.*, 2020)

Functional testing

- Isometric push tests
- Push-up endurance tests (Hu *et al.*, 2021)
- Bench press load % of bodyweight



Injury prevention strategies

- Importance of movement screening:

Detection

When you would us
FMS

(Cook et., 2014)

- Injury reduction strategies:

Technique

Gradual increase in intensity

Thorough warm up

Maintain strength and flexibility

Rehabilitation exercises

Effective Strategies for Treating Pec
Major Injuries – The Olympia Clinic
(2024)

- Return to contact:

Contact hitting pad

Being tackled

Tackling

Grapple

Return to tackle

FOOSH

(Sclafani and Davis, 2016)



Conclusion and Key Points

- Progressive strengthening
- Variety of exercises aiming for same goal
- RTP criteria and Injury prevention

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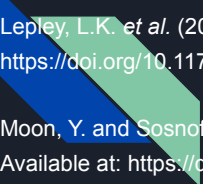
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