



**ADVANZ HEALTH**

SPORTS MEDICINE | PHYSIOTHERAPY

# MENISCAL

## REHABILITATION PROTOCOL

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Sports Medicine & Physiotherapy

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# MENISCAL

## **Anatomy**

The meniscus is strong fibrocartilage that sits within the knee joint and acts as a shock absorber and stabiliser of the knee. Each knee has 2 menisci, the lateral (outer) and medial (inside). Each meniscus also has a red zone and a white zone. The red zone is the outer of the meniscus and is aptly named as it has an adequate blood supply and higher potential for healing. The white zone is the inner of the meniscus and has a poor blood supply (therefore reduced healing potential).

## **Mechanism of Injury**

A torn meniscus is a common injury and is often caused by forcefully rotating or twisting the knee when it is bent. It can also be a result of degenerative changes in older adults.

## **Types of Meniscal tears**

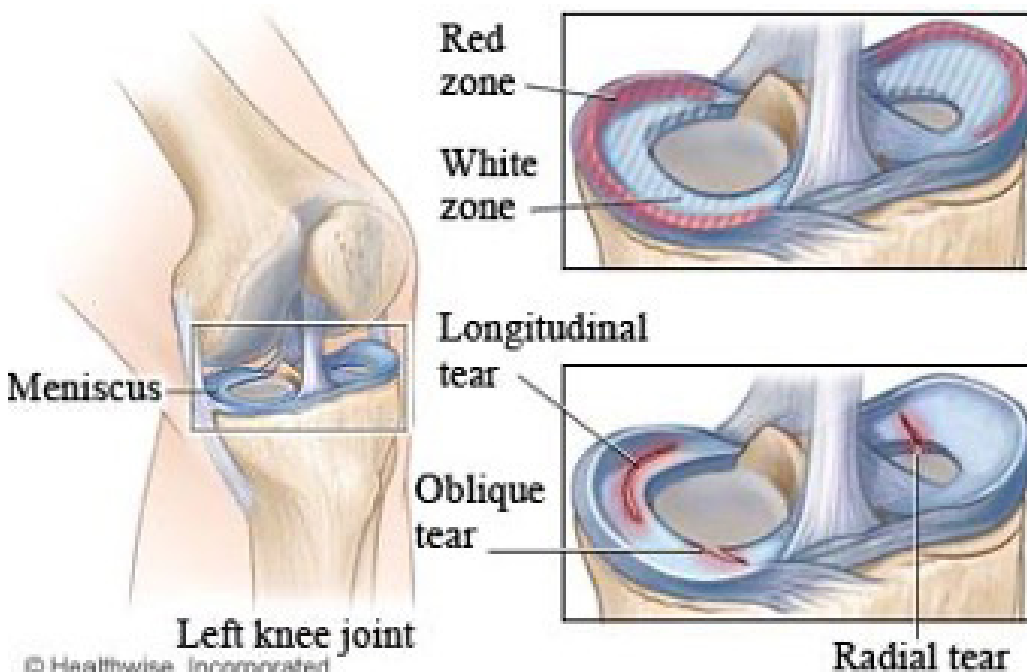
- Longitudinal tears occur in the red zone along the outer rim, therefore they usually follow the semicircular shape of the meniscus. They don't extend into the white zone
  - Bucket handle tears are a branch of longitudinal tears where there is displacement of the meniscus.
- Radial tears extend the width of the meniscus and usually involve both the white and red zones and follow the semicircular shape of the meniscus
  - Parrot-beak tears are a branch of radial tears where there is displacement of the meniscal flap.
- Horizontal tears involve the red and white zones and do not follow the semicircular shape of the meniscus.
  - Flap tears are a branch of horizontal tears where there is displacement of the meniscal flap.
- Anterior or Posterior horn/root tears refer to tears at either the front or back portion of the meniscus.

# MENISCAL

## Meniscal Repair vs Meniscal Debridement

Meniscal injuries can often be successfully treated without surgery (through physiotherapy), but if conservative management has failed then surgery may be required. Meniscal repair is a surgery that stitches the pieces of torn meniscus back together to promote healing. This technique is used to preserve the whole meniscus which makes it a great option in the right patient. The surgeon will also decide whether there is enough blood supply to the torn area to allow for a successful repair.

A meniscal debridement is a small procedure where a portion of the damaged meniscus is removed to allow the remaining meniscus in the knee to heal and function at its best. This is a more commonly used technique because of the limited bloody supply to the meniscus which makes healing difficult.



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# PROGNOSIS POST SURGERY

Recovery and rehabilitation after a meniscal repair generally takes much longer than recovery of a debridement.

After a meniscal debridement, patients typically require the use of an assistive device such as crutches for the first few days to prevent bearing too much weight on the healing leg. Most patients can return to typical daily activities after a week and resume sports activities at 8-12 weeks. Physiotherapy and exercise rehabilitation is essential to optimise strength, movement mechanics and prevent recurrence.

Repairs generally take additional time to heal, so patients must wear a supportive brace on the affected knee for 4 to 6 weeks in order to restore flexibility and strength to the knee. The surgeon may also require non-weight-bearing for 2-4 weeks. Full recovery, including return to sport may take approximately 4 months.

## PROTOCOL USER GUIDE

This protocol is a guide for both clinicians and patients who have undergone meniscal procedures. Every person's situation is different, therefore you move through the protocol at your own pace and the criteria should dictate how quickly you go (don't progress solely based on time).

To progress through the protocol as fast as possible with minimal problems, use pain and swelling as a guide. If the pain increases then the knee isn't tolerating what you're doing to it.

Clinicians should use a clinical reasoning approach in prescribing an exercise rehabilitation program and management advice for each phase. This protocol briefly suggests typical exercises for each phase, but programs should always be individualised.

# PRE-OP PHASE

Physiotherapy prior to surgery is important to reduce the swelling, regain movement and limit the loss of strength in the muscles around the knee. It also allows the clinician time to educate the patient about post-surgery expectations and familiarises them to the rehabilitation exercises.

GOALS	PRECAUTIONS	RECOMMENDED PROGRAM	CRITERIA TO PROGRESS TO NEXT PHASE (TICK WHEN COMPLETE)
<ul style="list-style-type: none"> <li>• Patient understands timeframes of healing process and rehabilitation process</li> <li>• Normal gait pattern</li> <li>• Muscle re-education and activation (especially in the quadriceps)</li> <li>• Maintain fitness</li> <li>• Regain knee extension</li> <li>• Settle swelling</li> </ul>	<p>Screen for contraindications and red flags</p>	<ol style="list-style-type: none"> <li>1. <b>Education</b> on importance of compliance of rehab program</li> <li>2. <b>Ice</b> therapy for pain relief (GameReady in clinic or ice-bath at home)</li> <li>3. <b>Stretching</b> program to increase range of motion of surrounding joints</li> <li>4. <b>Activation and strengthening</b> of knee, hip, ankle, core.</li> <li>5. Single leg balance</li> <li>6. Fitness maintenance:</li> <li>7. Fitness maintenance: Gym-based exercises for upper body</li> </ol>	<p>Rehabilitation occurs up until the surgery date</p>

*Please note that the below timeframes are a guide. Your surgeon or physio may request slight variations for optimum outcome.*



# IMMEDIATELY POST OP

Physiotherapy prior to surgery is important to reduce the swelling, regain movement and limit the loss of strength in the muscles around the knee. It also allows the clinician time to educate the patient about post-surgery expectations and familiarises them to the rehabilitation exercises.

	TREATMENT	PROGNOSIS
DEBRIDEMENT	<ul style="list-style-type: none"><li>• Under surgeon's instructions</li><li>• PRICER protocols</li><li>• General body strengthening</li></ul>	<ul style="list-style-type: none"><li>• A general guideline is to use crutches for 1-2 days and are able to return to their activities of daily living within 1 week.</li><li>• 1 month mark the patient is back to 80% and 90% at 2 months.</li></ul>
REPAIR	<ul style="list-style-type: none"><li>• Under surgeon's instructions</li><li>• PRICER protocols</li><li>• General body strengthening</li></ul>	<ul style="list-style-type: none"><li>• Longer recovery time as the meniscus needs adequate time to heal back together.</li><li>• Patients wear a brace for 4-6 weeks to limit movement and flexion in order to protect the repair.</li><li>• Rehab and physical therapy take an additional 6-8 weeks, and most patients return to sport activities at 4 months.</li><li>• Surgical knee in hinged rehab brace locked in full ext for 4 weeks post op.</li><li>• Surgeon will determine WBAT vs NWB</li></ul>

# PHASE 1 - EARLY REHAB (0-3 WEEKS)

GOALS	PRECAUTIONS	RECOMMENDED PROGRAM	CRITERIA TO PROGRESS TO NEXT PHASE <i>(TICK WHEN COMPLETE)</i>
<ul style="list-style-type: none"> <li>• Patient understands timeframes of healing process and rehabilitation process</li> <li>• Protection of the post-surgical knee</li> <li>• Normal gait pattern</li> <li>• Muscle re-education and activation (especially in the quadriceps)</li> <li>• Maintain fitness</li> <li>• Restore knee extension</li> <li>• Decrease pain/ oedema and swelling</li> </ul>	<ul style="list-style-type: none"> <li>• Screen for DVT</li> <li>• Do not flex the knee past 90 degrees</li> <li>• Monitor for surgery side-effects e.g.               <ul style="list-style-type: none"> <li>- Partial weight-bearing status (50%)</li> <li>- Abnormal pain-response</li> <li>- Abnormal gait patient</li> <li>- Weakness in lower limb musculature (quads, hamstring)</li> <li>- Infection</li> </ul> </li> </ul>	<ol style="list-style-type: none"> <li><b>1. Education</b> on importance of compliance of rehab program</li> <li><b>2. Ice</b> therapy for pain relief (GameReady in clinic or ice-bath at home)</li> <li><b>3. Manual therapy</b> to restore ROM within safe ranges</li> <li><b>4. Activation and strengthening</b> of knee (see videos)</li> <li><b>5. Fitness</b> maintenance: Gym-based exercises for upper body/core strength, upper body ergometer</li> </ol>	<ul style="list-style-type: none"> <li><input type="checkbox"/> 3 weeks post-surgery</li> <li><input type="checkbox"/> Knee straight to 0 degrees Knee able to bend 90 degrees</li> <li><input type="checkbox"/> Little to no swelling</li> <li><input type="checkbox"/> Quadriceps lag test 0-5 degrees lag</li> <li><input type="checkbox"/> Normalised and pain free gait without crutches</li> </ul>

# PHASE 2 – STRENGTH PHASE (4-6 WEEKS)

GOALS	PRECAUTIONS	RECOMMENDED PROGRAM	CRITERIA TO PROGRESS TO NEXT PHASE (TICK WHEN COMPLETE)
<ul style="list-style-type: none"> <li>• Full AROM</li> <li>• Normal gait at higher speeds</li> <li>• Regain balance and proprioception</li> <li>• Strength and control</li> </ul>	<p>No forced flexion with PROM or WB activities that push the knee past 60 deg of knee flexion.</p> <p>Avoid exercise that causes more than moderate pain (&gt;3/10) or swelling</p> <p>No impact activities</p>	<ol style="list-style-type: none"> <li><b>1. Phase 2 strength</b> exercises (see videos): Home based and Pilates reformer rehab</li> <li><b>2. Manual therapy</b> to improve ROM</li> <li><b>3. Non-impact balance</b> and proprioceptive drills</li> <li><b>4. Biomechanical analysis</b> and movement retraining</li> <li>5. Non-impact <b>endurance training</b>: stationary bike, swimming, deep water running</li> </ol>	<ul style="list-style-type: none"> <li><input type="checkbox"/> No swelling</li> <li><input type="checkbox"/> Pain free AROM and higher-level gait</li> <li><input type="checkbox"/> Single leg balance greater than 30 sec (eyes open), 10 sec (eyes closed)</li> <li><input type="checkbox"/> Lower limb strength (95% in comparison to other leg)</li> </ul>





# PHASE 3 – FUNCTIONAL STRENGTHENING (6-12+ WEEKS)

GOALS	PRECAUTIONS	RECOMMENDED PROGRAM	CRITERIA TO PROGRESS TO NEXT PHASE
<ul style="list-style-type: none"> <li>• Pain free functional weight-bearing activity</li> <li>• Advanced strengthening</li> <li>• Initiate sport specific exercise/agility</li> </ul>	<ul style="list-style-type: none"> <li>• Avoid activity that causes pain greater than 3/10 on VAS</li> <li>• Avoid post activity swelling</li> <li>• Post activity soreness should resolve within 24 hours</li> </ul>	<ol style="list-style-type: none"> <li>1. Advanced <b>strengthening</b> for hip/knee/ankle/core (see videos)</li> <li>2. Advanced <b>proprioception/balance</b> exercises</li> <li>3. Continue <b>aerobic fitness</b> (bike, swim, add impact such as running)</li> <li>4. <b>Running program</b> L1: Straight line running L2: S curves L3: Figure 8 L4: Zig zag</li> <li>5. <b>Sport Specific Drills</b> individualised to the client</li> <li>6. <b>Agility</b> drills</li> <li>7. <b>Biomechanical optimisation</b> (motor learning)</li> </ol>	<p>These tests passed (95% in comparison to other leg):</p> <ul style="list-style-type: none"> <li>- Single hop test</li> <li>- Triple cross over hop test</li> <li>- Balance</li> </ul> <p>D/C to HEP if:</p> <ul style="list-style-type: none"> <li>- Full functional strength, balance and proprioception</li> <li>- Specific movement screen for your sport</li> <li>- Pain free return to sports</li> </ul> <p>NB: It is recommended to continue your phase 3 program for minimum 6 weeks after full resolution of pain/symptoms and returning to your normal activities/sport.</p>



# RETURN TO SPORT TESTING

*These are general return-to-sport tests and we recommend that an individualised testing routine should be used for each client based on their relevant goals and sport (e.g. running speed/agility, swimming performance etc).*

EXERCISES	DESCRIPTION	CRITERIA TO PROGRESS BACK TO SPORT
Single leg hop for distance	<p>Test description:</p> <ul style="list-style-type: none"> <li>• Must stick landing for 2 seconds</li> <li>• Assess knee valgus and lateral trunk shift/trendelenberg</li> </ul>	<ul style="list-style-type: none"> <li>• No pain</li> <li>• 95-100% function of the uninjured side</li> <li>• Good form/technique</li> </ul>
Triple hop for distance	<p>Test description:</p> <ul style="list-style-type: none"> <li>• Hop on same leg 3 times for distance and stick landing for 3 seconds</li> </ul>	<ul style="list-style-type: none"> <li>• No pain</li> <li>• 95-100% function of the uninjured side</li> <li>• Good form/technique</li> </ul>
Triple cross over hop test	<p>Test description:</p> <ul style="list-style-type: none"> <li>• Start on left side of the line with R foot and hop across midline 4 times (crossover)</li> <li>• Repeat other side</li> <li>• Note distance, accuracy and technique</li> </ul>	<ul style="list-style-type: none"> <li>• No pain</li> <li>• 95-100% function of the uninjured side</li> <li>• Good form/technique</li> </ul>
Lateral hop test	<p>Test description:</p> <ul style="list-style-type: none"> <li>• Hop side to side over 30cm wide tape</li> <li>• As many times as they can in 30secs</li> <li>• Lose 1 point every time they touch the tape</li> <li>• Repeat other side</li> </ul>	<ul style="list-style-type: none"> <li>• No pain</li> <li>• 95-100% function of the uninjured side</li> <li>• Good form/technique</li> </ul>

# RETURN TO SPORT TESTING

EXERCISES	DESCRIPTION	CRITERIA TO PROGRESS BACK TO SPORT
Balance (Dynamic)	<p>Test description: Subjects stand on one leg with a small amount of flexion in the hip, knee and ankle, and place their hands on their waist. In this position, two assessments are performed:</p> <ol style="list-style-type: none"> <li>1. Side to side - At a rate of 60 beats per minute, subjects repeatedly turn their head from side to side (70-90 degree turn) for a period of 15 seconds. Vision needs to be inline with head position (no visual fixing).</li> <li>2. Up and down - At a rate of 60 beats per minute, subjects repeatedly tilt their head up and down (looking floor to ceiling) for a period of 15 seconds. Vision needs to be inline with head position (no visual fixing). The test is passed if subjects can maintain single leg stance and do not take their hands off their waist for both assessments.</li> </ol>	Pass both limbs
Range of motion	<ul style="list-style-type: none"> <li>• Knee</li> <li>• Hip</li> <li>• Ankle</li> </ul>	Range of motion must be 95-100% of uninjured side
Drop vertical jump	<ul style="list-style-type: none"> <li>• Start on box/step. Jump off with arms overhead and rebound into a jump</li> </ul>	Knee valgus angle not >180deg Lateral trunk shift angle not > 20deg

# RETURN TO SPORT TESTING

*This is a general return to sport test and an individualised testing routine should be used for each client and their relevant goals and sport.*

EXERCISES	DESCRIPTION	CRITERIA TO PROGRESS BACK TO SPORT
Drop vertical hop	<ul style="list-style-type: none"><li>• Start on Pilates box.</li><li>• Jump off with arms overhead and rebound into a hop, each side</li></ul>	Knee valgus angle not >180deg Lateral trunk shift angle not > 20deg

\*Testing should be done under same conditions each time (fatigued or non-fatigued).

Criteria to pass each test is:

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