

### Description

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A muscle strain occurs when part or all of the fibres within a muscle are torn. This results in pain, tenderness, swelling, and is often associated with a loss of movement and decreased muscle strength.

A range of tears can occur, from an overstretching of the muscle (micro tear) to a complete tear (rupture) of the muscle. Muscle strains can occur in any muscle, however they most commonly occur in the:

- Calf
- Hamstrings - back of thigh
- Quadriceps - front of thigh



### Causes

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The two main causes of muscle strains are:

1. **Over-stretching** the muscle, resulting from a sudden stretch beyond the usual range of motion or fast uncontrolled movements.
2. **Overloading** the muscle, which commonly occurs during quick acceleration or deceleration, changes in direction or when experiencing a sudden unexpected resistance.

Imbalances in strength and flexibility (muscles too weak or tight), poor foot mechanics, inappropriate training, or an insufficient warm up, can all be contributing factors to an increased susceptibility to muscle strains.

### Classification

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Physiotherapists grade muscle strains from I-III. The amount of swelling and bruising will vary depending on the severity of the tear. Remember that minor swelling and bruising does not necessarily mean a minor injury, and bruising can take days to appear. Specific testing by your physiotherapist will diagnose the severity of injury and provide you with an approximate timeframe for a return to sport.

<b>I MINOR TEAR</b>	<ul style="list-style-type: none"> <li>• Tear in a few fibres with mild swelling</li> <li>• Tenderness on palpation</li> <li>• Pain present with stretch and/or contraction of the muscle</li> </ul>	Symptoms persist for approx 10 days. The muscle is weaker for 3-6 weeks
<b>II PARTIAL TEAR</b>	<ul style="list-style-type: none"> <li>• Moderate swelling</li> <li>• Bruising evident – often later</li> <li>• Muscle spasm, loss of strength</li> <li>• Pain on stretch and contraction</li> </ul>	6-10 weeks before return to full activity
<b>III COMPLETE RUPTURE</b>	<ul style="list-style-type: none"> <li>• Marked tenderness, swelling and a lot of bruising</li> <li>• Palpable defect in muscle may be present</li> <li>• Muscle spasm and loss of strength</li> <li>• Loss of function or ability to move limb associated</li> </ul>	Can take 3-6 months to strengthen the surrounding musculature to compensate for ruptured muscle. Surgical intervention required in some instances.

## Treatment

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Appropriate treatment within the first 24 hours the healing of the muscle can greatly reduce further damage and improve healing time. This includes:

- R** - Rest
- I** - Ice
- C** - Compression (bandage)
- E** - Elevation (body part raised above heart)

Your physiotherapist can provide treatment to suit the grade of tear (1-3), which may include any of the following:

- massage (soft tissue)
- range of motion exercises
- muscle stretching and strengthening
- Neural stretches
- Hydrotherapy
- Correction of contributing factors such as running technique
- Advice on appropriate stretches and training practices

**A comprehensive rehabilitation guide for many common muscle tears can be found at [www.rehabonthenet.com](http://www.rehabonthenet.com). Please feel free to discuss any problems or queries with your physiotherapist or online at [www.rehabonthenet.com](http://www.rehabonthenet.com).**