

Bone Stress injury

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One of the most common overuse injuries in triathlon are bone stress injuries. Bone stress injuries occur when the stress placed on a bone exceeds the ability of body to repair and strengthen the bone. A bone stress injury can result in a significantly high number of missed training sessions, this can decrease your chance of performing at your best or potentially even cause you to miss an important event.

The good news is that there are things that you can do that can help reduce the risk of acquiring a bony stress injury. Some of the common factors are discussed here however, it is important that if you suspect that you have a bone stress injury or are at risk of one you should seek the advice of a Sports Physio or Sports Physician to determine which contributing factors apply to you.

1. Nutrition/Fuelling

Just like any other machine, our bodies need the right fuel to perform at our best. Inadequate or inappropriate nutrition, under fuelling and low energy availability are some of the most important contributing factors to bone stress injuries.

Bones are constantly being stressed, repairing and remodelling especially with high training loads. We need to provide our bones the right nutrition to allow them to remodel and become stronger therefore increasing their capacity for increased load.

Just as you plan and adjust your training sessions in the lead up to a race you should also plan and adjust your nutrition and hydration.

To gain the maximum benefit from your training, if you increase the volume, frequency or intensity of sessions you should also increase your energy availability and adjust your nutrition to match the demands of your training phase or session. Whether you are working on building a strong aerobic base or trying to push the limits of your speed and power, nutrition plays a vital role to ensure that your body can recover and continue to make gains rather than sustaining injuries such as bone stress injuries.

Some factors to consider when it comes to nutrition are: type of fuel (e.g. protein, carbohydrates), timing of meals/snacks and quantity of different types of nutrition.

Appropriate nutrition is one of the best forms of recovery therefore it is important to consider what you eat before and after training and racing to ensure your body is reaching its full potential. Always plan your snacks and meals ahead of time so that you can be prepared to supply your body with the energy it needs in a timely manner (and you don't have to plan what to eat when you are exhausted from a long ride!).

Sports Dietitians Australia have some great freely available sports specific resources regarding nutrition. Or if you would like more individual advice it is highly recommended to consult a Sports Dietician who is familiar with triathlon. This can also help identify any deficiencies that may contribute to your risk of bone stress injuries.

[Food for Triathlon: Long Course - Sports Dietitians Australia \(SDA\)](#)

2. Load

Sudden increases in loading can lead to many overuse injuries especially bone stress injuries. If we don't give our bones time to build their capacity, they will breakdown and bone stress injuries can occur. Ensuring your acute load is not significantly exceeding your chronic load is a good way to minimise your risk of injury.

Ensuring that you have sufficient recovery time for your bones between high impact sessions is also a factor to consider when planning training sessions. Spacing out run sessions with swimming and cycling is a good way to give your bones the maximum amount of time to repair and remodel.

Considering the load/stress your whole body is under from the combination of sessions and your lifestyle is also important not just the the specific load of each individual training session.

It is important to consider that significant periods of underload e.g. having a cold or going on holidays for 2 weeks and not being able to run means that the capacity of your whole body and your bones has decreased and we can't just pick up where we left off. A gradual return to the level of training that we were at before the time off is advised to minimise injury risk.

If you do not have a good understanding of the concept of load and you are concerned that you may have some loading errors in your training, consulting a trained triathlon coach can be helpful.

3. Sleep

Sleep is fantastic for recovery of every part of our body and the research has shown that having 8 hours of sleep or more a night significantly reduces the risk of all injuries in athletes including bone stress injuries.

Prioritising sleep and nutrition over other forms of recovery is the most effective way to avoid injuries.

Adequate sleep also assists in optimising mental health, reducing stress, assisting in normalising hormonal activity and allowing psychological recovery.

4. Strength, biomechanics and Technique

Particularly in novice athletes muscle weakness/imbalance and run technique can increase the stress placed on particular bones or parts of bones.

Attending run sessions with your club or squad can provide general advice on optimal run technique and are a great place to start.

Having your run technique assessed individually can help identify potential technique errors that may increase your risk of bone stress injuries. Cues and specific running drills can be prescribed to assist in minimise these risks before injuries occur.

Having a musculoskeletal screening with a Sports Physio or Exercise Physiologist familiar with triathlon can also identify weaknesses or poor biomechanics and provide you with preventative exercises to reduce your risk of injury.

Strength and conditioning and mobility exercises should always play a part in a triathlon training program.

There are also actually exercises that Exercise Physiologist and Sports Physios can prescribe to increase the strength of your bones and decrease your risk of bone stress injuries.

How to recognise that you may have a Bone Stress Injury:

- A gradual onset of pain without a specific mechanism, most likely in the lower limbs with triathletes

(however, there can be a sudden intense pain in some cases)
- Pain can be a vague aching area or a focal point
- Painful with impact activities e.g. running, the pain will become worse throughout the activity
- Sometimes swelling is present over the area
- Usually, the bone is painful to touch
- Aching pain after activity
- Night pain is a common symptom, however only 50% of bone stress injuries in athletes report having night pain
- Common areas of bone stress injuries in triathletes are:
 - Feet
 - Shins
 - Thigh
 - Hip
 - Pelvis

If you suspect that you have a bone stress injury you should see a sports physio or sports physician that is experienced in endurance sports to assess the need for investigations, referrals to other health professionals and training modifications.