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# DOES IT NEEDLE YOU?

Some injuries don't respond to conventional treatments - and require something that can get to the heart of the matter. But injection therapies should not always be seen as a last chance saloon. Pure Sports Medicine's **Dr Rick Seah** explains the role injection therapies can play in runners with injuries

**A**ll runners, at some point in their training, may encounter injuries that stop them from doing what they enjoy. In some cases, rest can be appropriate but if this does not resolve the issue, definitive diagnosis and treatment may be sought. Injection therapies will form part of this gamut of treatment.

## WHAT ARE THEY?

Injection therapies are medicines that work best if delivered directly by injection to the site of injury. This will require the use of sterile syringes and needles. They are relevant for both acute and chronic musculoskeletal injuries. They are particularly suited to the athletic populations - in fact some of these treatments were designed with the injured runner/athlete in mind!

Injection therapies can range from corticosteroid to hyaluronic acid to 'PRP injections' and all work in subtly different ways. Further examples are listed below but this list is not exhaustive!

They will often be coupled with appropriate physiotherapy treatment to comprehensively rehabilitate the injured body part. Due to the invasive nature of the injection therapies, they are saved as second or third line treatment options when injuries prove resistant to initial management.

## WHO NEEDS TO GET INVOLVED?

In the sporting arena, these injections are often delivered by sports physicians and sports injury surgeons. These are medically trained doctors who have received specific training to administer these injections. This is important, as side-effects arising from lack of knowledge about the constituents and poor injection technique can result in infection, increased pain, excessive bruising and unwanted puncture of important structures such as arteries and nerves. An episode from the British sitcom 'Doc Martin' where a patient injects her own brow with Botox for cosmetic reasons and inadvertently takes away her ability to blink is extreme but illustrates the dangers of straying from this convention!

Informed consent (whereby the doctor explains the procedure, possible risks and side-effects as well as provide aftercare instructions) is essential and strongly

encouraged as providing ideal care to the patient. Patients must know why they are receiving any injections.

To guarantee accuracy, there is an increasing trend to do these injections under guidance. In the clinic setting, ultrasound machines (similar to the machines that are used to do pregnancy baby checks) are ideal for visualising the injured area and delivering these guided injections. They have the added advantage of being radiation-free (compared to x-rays and CT scans).

## CORTICOSTEROID INJECTIONS

These are among the most common injection therapies and have been around for decades. They have a potent pain modifying and anti-inflammatory action. The onset of action is rapid, with noticeable improvements in days to weeks (often one to two weeks). They are often delivered with local anaesthetic medication (pain-numbing agents injected into the skin to give short-term pain relief). Conditions which can be treated with these injections include knee and hip arthritis, swollen ankles and painful toes (capsulitis of the toe).

Corticosteroid injections are different from anabolic steroids (which are banned and used illegally by some bodybuilders as performance-enhancing drugs). From a competition perspective, corticosteroids are permissible for injection into injured joints by the World Anti-doping Agency (WADA) and have no performance enhancing properties.

They are generally very safe but occasionally, side effects do occur. This can include infection although the figures quoted in medical journals range from one in 5000 injections to one in 10,000 injections (in effect, this translates to less than 0.1 per cent). A 'steroid flare' - whereby pain is intensified for a few days after the injection before settling down - is more common.

Other risks include skin pigment changes and particularly in young female runners, 'spotting' between their periods can occur. This is fairly harmless but females should be warned in advance that this might occur to prevent unnecessary worry.

Repeated corticosteroid injections into the same joint can also cause unwanted side-effects, resulting in the bone and cartilage becoming 'degenerate' and unhealthy. A helpful tip is to advise patients 'no more than three corticosteroid injections per body part per year'.

**About the author****DR. RICK SEAH**

Dr. Rick is based in London where he works as a consultant sports physician at Pure Sports Medicine ([www.puresportsmed.com](http://www.puresportsmed.com)) clinic and the English Institute of Sport. He is also an honorary consultant in sport and exercise medicine at University College London Hospitals NHS Foundation Trust and works as a medical officer for British Fencing and GB Canoeing (Slalom). He was part of the LCOG sports medicine team for the London 2012 Olympic and Paralympic Games.

## ACUPUNCTURE

Acupuncture is a form of therapy in which fine needles are inserted into specific points of the body. This is not strictly grouped under the injection therapies as no medication is injected. It is, however, definitely worth a mention as this involves needles being introduced into the skin and are commonly used by physiotherapists, doctors and other allied health practitioners.

Acupuncture can be approached in different ways - traditional Chinese acupuncture utilises the concept of 'pain meridians', whereas western medical acupuncture utilises the concept of dry needling to help with myofascial trigger point release (simply put, 'releasing the knots in your muscles which cause you pain').

Depending on the condition that is being treated, often a combination of the two techniques is used. It can be very helpful for treating different types of pain such as iliotibial band friction syndrome ('runner's knee'), low back pain and other conditions such as a tension headache.

Just because medication is not being injected does not mean that practitioners should be lax about hand and skin hygiene precautions. In general, avoiding handling the disposable acupuncture needles excessively is to be encouraged.

In the hands of an experienced practitioner, acupuncture is generally very safe. Serious side effects are rare, occurring in less than 0.01 per cent of treatments. These can include bruising, fainting, minor bleeding and sleepiness (so be careful if you are planning to drive afterwards!).

## HIGH VOLUME INJECTIONS

These injections are also referred to as 'hydrodistension' or 'hydrodilatation' injections. They are used to treat frozen shoulder (adhesive capsulitis), Achilles tendon (Achilles tendinopathy) and knee tendon injuries (patellar tendinopathy). Constituents comprise of corticosteroid, local anaesthetic and sterile normal saline.

Plausible theories on how they work include mechanical distension of the tightened tissue (in the case of the shoulder capsule) and obliteration of abnormal nerve endings in the knee and ankle, thereby allowing a 'pain-free window' in which physiotherapists can progress the treatment. Having the procedure alone and not doing accompanying physiotherapy rehabilitation tends to lead to poorer outcomes and subsequent return of the original symptoms.

This is a relatively novel procedure which should be performed under image guidance (often ultrasound) and was introduced in the UK within the last decade or two. More research to study the mechanisms of action is needed but generally, it is considered a safe procedure. It has also encouragingly reduced the number of surgical procedures carried out for what were previously persistent and difficult to treat conditions.



Acupuncture can be approached in different ways

Injection therapies are medicines that work best if delivered directly by injection to the site of injury

## HYALURONIC ACID INJECTIONS

These are also known as 'viscosupplementation' injections. The knee and hip are known as synovial joints. The inner membrane of synovial joints is called the synovial membrane and this secretes synovial fluid (which contains hyaluronic acid) into the joint cavity. The functions of the synovial fluid include shock absorption and reduction of friction.

Injured knee and hip joints lose the ability to produce this synovial fluid and become depleted. Hyaluronic acid injections are designed to restore this fluid and also encourage the synovial cells to start producing synovial fluid again.

This is helpful in older runners who wish to continue running but have degenerate hips and knees. These injections can reduce pain and hold off surgical operations designed to replace the joint. Often a series of injections are needed but newer one-off HA injection formulations have since been introduced to the market.

## PLATELET-RICH PLASMA (PRP) INJECTIONS

Platelet-rich Plasma (PRP) injections are a novel 'cutting edge' treatment that involves taking a patient's own blood and concentrating the levels of platelets and growth factors to promote healing in injured musculoskeletal tissue. This treatment has been in use for more than a decade, but has gained popularity worldwide more recently due to media coverage of its use in injured high profile athletes such as Tiger Woods, Rafael Nadal, Kobe Bryant, and Jermaine Defoe.

Some laboratory studies have demonstrated that the increased concentration of growth factors in PRP are able to augment the body's natural healing process, other studies have not shown this beneficial effect. The evidence base on this treatment is growing all the time and PRP injections appear to be more helpful in some conditions compared to others. They were once considered controversial, but have since gained acceptance within the medical and sporting community, particularly for longstanding problems involving soft tissues which have poor healing properties, such as tendon and ligament injuries. It is also now legal and permissible for use within elite sport.

It is not generally considered to have any major harmful effects, because apart from a patient's own blood, no other constituents are added to the injection. For that reason, it is popular with patients who want more of a 'natural approach' to dealing with their injuries. A variation on the PRP injection is the 'autologous blood injection' which is based on a similar principle but misses out on the step of centrifuging the blood sample and deriving the concentrated platelets which contain high levels of a patient's own growth factors.

Conditions that can be treated with PRP include tennis and golfer's elbow, rotator cuff injuries, plantar fasciitis, hamstring injuries, longstanding muscle and ligament tears. Often a series of injections are required.

As a rough guide, the gap between each injection is several weeks to allow the tissue to heal. This procedure works much better if coupled with a comprehensive rehabilitation programme.

Persistent injuries might benefit from injection therapy



### I HAVE AN INJURY WHICH STOPS ME FROM RUNNING. DO I DEFINITELY NEED AN INJECTION?

No, an injection to treat an injury is not always necessary. Some injuries will recover with physiotherapy treatment or rest alone. Doing an injection for the sake of it or being overzealous about trying to recover ahead of schedule can, paradoxically, make the situation worse. It is always better to be cautious and if in doubt, discuss this in greater detail with your own sports physician or surgeon.