

TREATMENT

A fresh spin on self-preservation

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Platelet Rich Plasma (PRP) started as a treatment for healing wounds, and then for injuries to tendons (such as tennis elbow), the rotator cuff of the shoulder, and osteoarthritis at joints like knees, hips and ankles. Now, researchers are studying its effectiveness for treating cardiovascular disease, with even the cosmetic industry looking to get into the action.

Dr Steven Sampson, founder of the Orthohealing Centre and clinical instructor of medicine at the David Geffen School of Medicine at University of California, Los Angeles, has used PRP on thousands of patients over five years. He says it's popular with patients who don't want to take drugs to stop pain or have surgery, and who like the idea that they are using their bodies to heal themselves.

In PRP, the patient's blood is spun in a centrifuge to separate the red blood cells, which are removed leaving a clear plasma packed with platelets, irregularly disc-shaped bodies that release growth factors for the body to heal itself. The plasma is injected using ultrasound imaging to the injury site.

Sampson says that after using it on European football players, he saw 50 per cent faster recovery times. "The sooner we get hold of an injury if we believe it is not healing appropriately or needs a boost to avoid surgery, the better.

"With chronic injuries, we have to restart the healing process by creating some early inflammation. This process takes weeks to months. Older injuries may require more injections – up to three. A newer one may require a single shot."

He says that successful outcomes also lie in ensuring the correct indication for treatment, as well as ensuring that the PRP reaches its intended target.

But the medical community is divided on the effectiveness of the treatment. Researchers from New York's Hospital for Special Surgery, presenting a study at the American Orthopaedic Society for Sports Medicine's Specialty Day in San Diego in February this year, found PRP to be ineffective.

The trial involved 79 patients split into two groups: those who received platelet-rich plasma with a fibrin matrix (PRFM) and those who didn't. (PRP is used interchangeably with PRFM, which is the term used most often in conjunction with soft tissue augmentation.)

Standardised rotator cuff repair techniques were used for all patients, as well as post-operative rehabilitation protocols.

The tendon healing was evaluated using ultrasound at six and 12 weeks post-operation.

"Our study demonstrated no real differences in healing in a tendon-to-bone rotator cuff repair. In fact, this preliminary analysis suggests



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DR PATRICK GOH

that the PRFM, as used in this study, may have a negative effect on healing," says study author Dr Scott Rodeo.

A 2010 study by The Hague Medical Centre in the Netherlands, published in the *Journal of the American Medical Association*, also refutes the efficacy of PRP.

Among 54 patients aged 18 to 70 years with a chronic injury of the Achilles tendon, a PRP injection compared with a saline injection did not result in greater improvement in pain and activity.

Anecdotally, however, it's another story. PRP's fans include professional athletes such as New York Yankees baseball player, Alex Rodriguez, who had Orthokine therapy, a type of PRP therapy, on the recommendation of LA Lakers star basketball player Kobe Bryant late last year.

Dr Patrick Goh, specialist sports physician at Sports Medicine International in Singapore, has had repeated success using PRP on patients over four years. "One of my early patients was a late-40s tennis coach with a moderate-sized calf muscle tear who we returned to play in two weeks," he says, adding that the expected time without PRP would have been four to six weeks.

"Another was an over-40 recreational football player with cartilage wear and tear, who was unable to run for two months. He was treated with PRP and went on to play a full game a week later."

WHAT IS PRP?

Platelet-rich plasma (PRP) treatments have been used by plastic and maxillofacial (mouth, jaw and neck) surgeons for more than two decades to improve the healing of wounds and bone grafts. In recent years, it has also been used by orthopaedic surgeons and sports medicine specialists.

It's a relatively simple process: a patient's blood is spun in a centrifuge, then red blood cells are removed, leaving a platelet-rich plasma with enhanced clotting ability. This plasma (PRP) is then injected into the patient's injured area.

Common applications in sports medicine include:

- Tennis elbow
- Achilles and patellar tendonitis
- Rotator cuff tendinopathy

But Goh says this speed of recovery is not the norm for PRP, which usually takes four to six weeks. He treated competitive waterskiier Mark Amin with PRP for a cartilage tear and bursitis on his shoulder, and Hong Kong-based businessman Leslie Koh for tennis elbow and knee joint pain.

Amin, who has had PRP on both shoulders over two years, says healing time for his condition took longer than Goh's average – about eight to 10 weeks, but during this time, movement in the shoulder area was unrestricted and pain free.

"It is a safe and non-invasive treatment in line with my preference for 'self-healing', albeit assisted. Other treatments were only a source of temporary pain relief, but did not tackle the root cause," says Koh.

"The procedure was done within an hour. After a day or two of rest, I started on some light stretching exercises to loosen up the joints, and after five days, began some strengthening exercises targeting the muscles that had been injured or that had supported the injured joint," says Koh.

Last year, leading PRP researcher Dr Allan Mishra and colleagues at Stanford University Medical Centre, studied the effects of platelet cell therapy on cardiac function after inducing a heart attack in a pig model. The therapy, which contains white blood cells in specific ratios and concentrations in addition to platelets, was found to enhance the amount of blood pumped out of the ventricles by 23 per cent.

In another 2011 study, Mishra and colleagues induced cardiac ischemia (blood restriction) on 28 mice and then injected them with either a proprietary formulation of concentrated platelets and white blood cells called RevaTen or saline. Mice that received PRP after ischemia had significantly better cardiac function. Additionally, less scar tissue was found in PRP-treated hearts than in the control group.

Coronary heart disease is the leading cause of death in industrialised nations, with nearly half a million heart attacks each year, and near-epidemic numbers of patients suffering heart failure.

"[The use of PRP for cardiovascular disease] is a pertinent topic as there is an epidemic of cardiovascular disease in the US and abroad, and, therefore, more natural, cutting-edge therapies are needed," says Sampson.

"As more clinical studies are done and demonstrate its success, PRP is likely to become more mainstream," says Goh, adding that the treatment will find new applications, such as in the cosmetics industry.

PRP is already being used to rejuvenate the skin or scalp, and the treatment can improve signs of ageing like fine lines and sunken, dry skin. It can also be used on the body to stimulate regrowth, including the hands, neck and scalp for hair loss.

Platelets are separated from blood cells like these and injected into the body. Photo: Corbis