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Stem cells, PRP, arthroscopy and the rest

What really works for shoulder and knee pain
...and what doesn't!

NEW ROOMS
CAMPBELLTOWN



With Mayo-Clinic trained
Orthopaedic Surgeon
Dr Jonathan Herald



Shoulder and knee arthritis is often the perfect storm of bad genetics, niggling sports injuries and the relentless march of time and weight - on average 1kg of weight adds up to 4kg of force to the knee when you are squatting.

And with an ageing population and [two in three Australian adults now overweight or obese](#), arthritis is more common than ever.

With this new onslaught of knee pain, almost every patient or GP I speak to asks me the same questions.

Do stem cells and PRP work? When should I use arthroscopy? How many cortisone injections are safe? What is the Biopen?

I've put together this quick snapshot for GPs referring to the latest college position statements, peer reviewed studies and Mayo Clinic patient overview statements on the latest non-invasive orthopaedic treatments.

I look forward to seeing you at our next GP event or visit in your rooms.

Kind Regards,

Dr Jonathan Herald

PROCEDURES & CONDITIONS DR HERALD TREATS

- ACL Reconstruction
- Arthritis (Non-surgical & Surgical)
- Arthroscopy (all joints)
- Bursitis
- Cartilage Resurfacing
- Elbow surgery UCL transposition
- Emergency Appointments
- Fractures
- Gait Assessment
- iPain- technology injury treatment
- Knee replacement surgery
- Meniscal Repair
- Nerve Entrapment
- Patellar Tears and Instability
- Patient Specific Implants (for rotator tears AND arthritis)
- Physiotherapy
- Rotator Cuff Injury
- Runner's Knee
- Shoulder Replacement
- Shoulder tears, instability
- Sports Injuries (eg SLAP)
- Swimmer's Shoulder
- Tennis Elbow
- Work Cover injuries

What works for arthritis?



FISH OIL



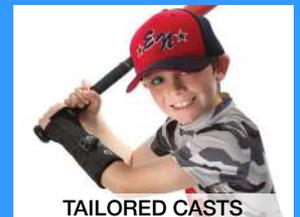
PRP



STEM CELLS



INJECTIONS

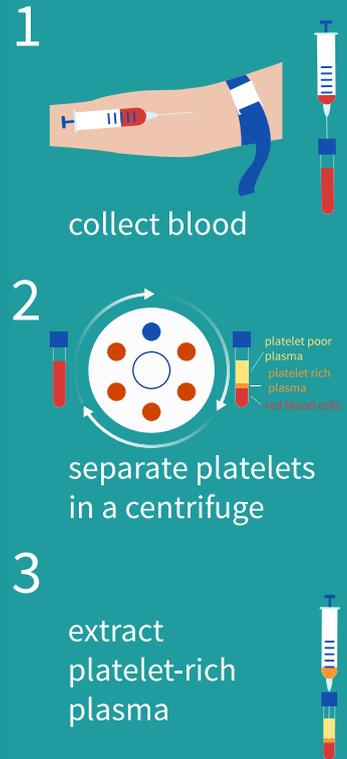


TAILORED CASTS



What works and what doesn't?

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PRP

PRP is plasma with many more platelets than are typically found in blood and the concentration of growth factors is 5 to 10 times richer than usual.

Platelets stimulate the inflammatory process which may in turn expedite the body's natural healing process. Typically, two injections are required after two teaspoons of the patient's blood is drawn and platelets extracted through centrifuge process.

In Australia, PRP is used for tennis elbow with some success, and a recent study reported in Orthopaedics Journal, 2016 found that [PRP was more effective than cortisone for plantar fasciitis](#).

One small study reported to The American Academy of Orthopaedic Surgeons annual meeting in 2014, [found in a small study of 40 patients, that PRP was better than cortisone](#) for Greater Trochanteric Bursitis.

What about for knee arthritis? [This article in the American Journal of Sports Medicine found that PRP was significantly better than saline injections in 78 athletes](#) though [The American Academy of Orthopaedic Surgeons \(AAOS\)](#) also concludes that while PRP is most effective for tennis elbow, its efficacy for patellar tendon injury (runner's knee) is not well proven.

PRP is not covered by Medicare and a single treatment costs from \$350-\$550 per treatment with often up to three treatments required.



INJECTIONS & FILLERS CORTISONE -

In people with diabetes cortisone can elevate blood sugar and should also be used in caution in people with bleeding disorders. [According to the Mayo Clinic](#), cortisone is usually well tolerated for most, and most guidelines recommend three to four injections a year for non-chronic conditions and maximum of one every six weeks for chronic conditions.

Side effects include thinning of the skin and soft tissue around the injection site, tendon weakening, thinning of nearby bone and a temporary increase in blood sugar. The cost of the actual cortisone injection (outside of doctor's fee) is covered by Medicare in Australia.

INTRA ARTICULAR FILLERS - Recommended for knee joints only at this stage, and it may have temporary success in some patients where other OTC pain medications have failed. It takes about a month to work and some patients occasionally will have synovitic reaction, causing pain and swelling. Strenuous lifting or activities should be avoided. Injections cost around \$476 a shot but some patients have had up to six months relief with just one injection.



WHAT'S NEW IN 3D PRINTING? BIOPEN -

The [Biopen](#) is currently being developed at St Vincent's Aikenhead Centre for Medical Discovery in Melbourne.

This 3D printer pen is filled with stem cell "ink" removed from the patient before surgery, and prints in a material called hydrogel that allows cells not just to survive but to multiply and make cartilage tissue. The goal is to try and repair injuries that are currently impossible to repair completely and to date it has been successfully tested on sheep.



WEIGHT LOSS

Every extra kilo adds 4kg of pressure to the knee when squatting, while recent studies show weight also affects shoulder surgeries by increasing chance of mechanical failure.



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STEM CELLS

Without fail, almost every GP I see asks me about the efficacy of stem cells. I have heard of many patients who have gone overseas for stem cell treatment - which cost them thousands of dollars to no avail.

And certainly in years past, Australians have been warned that they are [putting themselves at risk by undergoing this treatment](#) which is widely unregulated.

Like many surgeons, I do not believe there is currently enough evidence to recommend stem cell treatments for

routine treatments outside of a clinical setting, given the cost and potential for harm to a patient.

In fact, we already know of at least [one death in Australia during a stem cell for arthritis liposuction procedure](#), and although this was due to the liposuction procedure, not the stem cells, it still highlights the need for caution.

However, the use of biologic adjuvants in the treatment of orthopaedic injuries is one of the game-changing fields of the speciality. Once refined its efficacy and safety better established, stem cells may

well revolutionise the way physicians treat patients in the future.

[The University of Bristol](#), is currently working on using stem cells to reproduce an "unlimited supply" of blood, which is lifesaving for people with rare blood types or when blood supply is low. In Australia, a Melbourne breakthrough [reported in the British Medical Journal](#) last year includes cartilage being regrown in a 26-year-old athlete using stem cells and I look forward to the results of two studies being conducted using stem cells for arthritis pain next year.



SHOULDER UPDATE

The type of stem cells can make a significant difference too. As the field grows, doctors are finding that not just embryonic stem cells but adult stem cells and "adipose" stem cells are other autologous cell solutions.

Currently, [the first FDA approved stem cell study for rotator cuff tears is underway in the US](#) and we should have the results later in the year. The early results are promising [with adipose or fat seemingly more effective in becoming "any tissue"](#), [doctors in Germany who are leading the study say](#).

TENS UPDATE

The Journal of Pain Management concedes evidence is mixed but ["systematic reviews suggest that TENS \(Transcutaneous electrical nerve stimulation\) when applied to maximally tolerated intensity, may be effective for postoperative pain, osteoarthritis and some acute pain conditions"](#). High intensity TENS machines can be purchased for \$139 from TENS [www.tensmachinesaustralia.com.au](#). Partially covered by BUPA. Call 1300 361 22 for more information.

Another study has found that Mesenchymal stem cells (adult stem cells) may be [the Holy Grail of Orthopaedic Surgery](#).

As a therapy for knee therapy, stem cells to date have proven to be more symptomatic treatment than regenerative.

And most importantly, there are still some unresolved concerns about immunologically compatibility of neotissues - and the need to better establish that stem cells are not prone to malignancy over time.

The [position statement of the Australian Rheumatology Association](#) is a cautious one - saying that while cell-based treatments are "promising", more clinical trials are needed, and as yet there is not enough supportive evidence to recommend stem cell therapy to patients given the huge cost and unknowns.



WHAT'S NEW

The Exos cast is molded directly to the patient for the best possible fit, comfort and stabilization. Light-weight, waterproof and easy cleaned.

For free training for GPs go to DJO Global in Sydney- 0417 737 777

Cost for wrist brace of \$95 is covered by Medicare standard cast billing code.



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NATURAL HEALTH

FISH OIL

The combined position statement from the [Australian Rheumatology Association/Arthritis Australia](#) says that fish oils may help to relieve joint pain and stiffness and may also reduce the reliance on NSAIDs in the long term.

Tuna, salmon, flaxseed, canola and walnuts are good dietary sources with research suggesting the daily dose to reduce inflammation is 2.7g of omega 3 (EPA plus DHA). This dose usually requires

Nine-14 standard 1400mg fish oil capsules or five to seven capsules of a fish oil concentrate daily

Or 15mls of bottled fish oil or five to seven mLs of concentrated bottled fish oil per day.

At lower doses, fish oil can benefit heart and general health, but lower doses will not control arthritis.

GLUCOSAMINE AND CHONDROITIN

(Glucosamine sulfate, glucosamine hydrochloride, d, N-acetyl glucosamine is a major component of joint cartilage. Trial results are mixed but according to this position statement from [The Australian Rheumatology Association and Arthritis Australia](#), the combination of glucosamine sulfate and chondroitin may be effective in reducing moderate to severe knee pain from OA.



“At lower doses, fish oil can benefit heart and general health, but lower doses will not control arthritis.”

Australian Rheumatology/
Arthritis Australia

Recommended dose is

- Glucosamine sulfate: 1500mg per day
- Glucosamine hydrochloride: 1500mg per day (note, glucosamine sulfate is suggested to be more effective)
- Chondroitin sulfate: 800 -1000mg per day
- May take four to six weeks for any improvement
- Side effects may include (shellfish allergy reaction), bleeding (may interact with blood thinners), upset stomach, headaches and skin reactions
- Patients with diabetes should check with their doctor before taking glucosamine.

KNEE ARTHROSCOPY

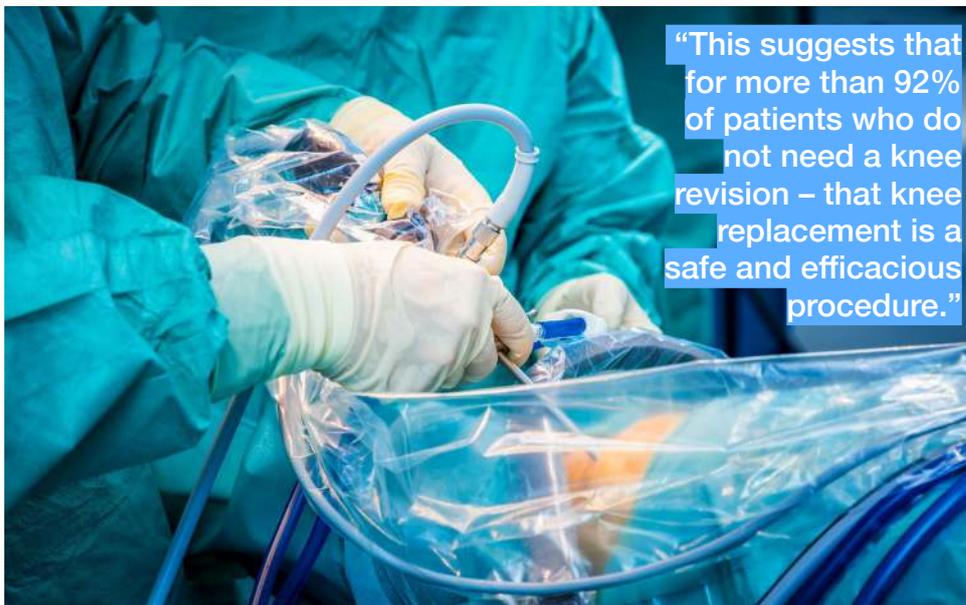
In recent years there has been a lot of conflicting medical opinion about arthroscopy – and whilst we have definitive evidence it is not effective for

knee arthritis, the latest [Australian Knee Society Arthroscopy Position Statement](#) suggests that arthroscopy may be used in the following circumstances:

- Known or suspected septic arthritis
- Symptomatic nonrepairable meniscal tears
- Symptomatic loose bodies
- Surgeon-assessed locked or locking knees
- Traumatic or atraumatic meniscal tears that require repair
- Inflammatory arthropathy requiring synovectomy
- Synovial abnormalities requiring biopsy or resection
- Large unstable chondral abnormalities
- As an adjunct to, and in combination with, other surgical procedures (eg, high tibial osteotomy and patellofemoral realignment)
- When the diagnosis is unclear on magnetic resonance imaging (MRI) or MRI is not possible, and the symptoms are not of OA.

SHOULDER ARTHROSCOPY

For shoulder and elbow conditions, arthroscopy is effectively used routinely for rotator cuff tendinitis of the shoulder, Acromioclavicular joint arthritis, shoulder debridement, biceps tendon disease, tennis elbow, releasing scar tissue in the elbow and osteochondritis dissecans.



“This suggests that for more than 92% of patients who do not need a knee revision – that knee replacement is a safe and efficacious procedure.”

NON-SURGICAL v KNEE REPLACEMENT

Finally, whilst I am a big advocate of physiotherapy and the judicious use of non-surgical therapies, it is important to remember that after three-six months without results, that no patient should have to live in extreme pain.

According to 2017 data from the [National Joint Replacement Registry](#) there were 60,093 knee replacements undertaken in Australia in 2016– an increase of 139.8% on the number of primary knee replacements since 2003.

The proportion that required revision also decreased from 8.8% to 7.4%.

This suggests that for more than 92% of patients who do not need a knee revision – that knee replacement is a safe and efficacious procedure.