ORTHOSPORTS NEWS

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ORTHOSPORTS LOCATIONS

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- Penrith 02 4721 1865
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www.orthosports.com.au

Welcome Message

Welcome to our Summer edition of Orthosports News – the final edition for 2011! Our Shoulder Examination Series continues on page 3. We also look at the developments in Patient matched surgery for Total Knee Replacement.

Our aim is to provide you with updates in Orthopaedic news and we would greatly appreciate you letting us know of any areas you would like us to cover in future newsletters. Simply email education@orthosports.com.au with your feedback.

We wish you all the best for Summer and the festive season ahead. **The Team at Orthosports**

AOA AUSTRALIAN ORTHOPAEDIC ASSOCIATION

WHO ARE WE?

Orthosports is a professional association of Orthopaedic Surgeons based in Sydney.

We specialise in joint replacement, arthroscopic and reconstructive surgery.

Orthosports also includes a team of Sport & Exercise Medicine Physicians who are dedicated to promoting excellence in the treatment of musculoskeletal disorders in both adults and children.

Our team of surgeons has particular expertise in hip and knee replacement, ACL Reconstruction, knee and shoulder arthroscopy, open shoulder surgery, trauma, foot and ankle surgery, fracture management, paediatrics and many subspecialist procedures.

All of our practices are conveniently located next to physiotherapy, x-ray and imaging facilities.

Our mission is to have the facilities to offer everything our patients may need but also to be small enough to look after the little details that make all the difference to patient care.

OUR WEBSITE IS YOUR ORTHOPAEDIC RESOURCE

If you haven't visited our website recently, please take the time to visit and take a look around. It contains descriptions of many common surgical conditions and procedures as well as lectures, animations and videos of lectures given by our surgeons and sports physicians over recent years.

www.orthosports.com.au

Muscle Corks (Contusions)

Muscle corks are common injuries which occur in all contact sports (eg including basketball). This is a direct blow (contusion) to a muscle with blunt force – often the knee directly into an opponent's quadriceps. The excellent vascularity of muscles means that they often bleed causing movement restriction, pain and weakness. The number of fibres damaged will determine the grade and severity of the injury.

The initial medical management may be remembered by the acronym PRICED:

- **PROTECTION** – stop what you are doing and prevent further injury
- **REST** – avoid excessive activity for a few days
- **ICE** – apply an ice pack to the affected part for 10-20 mins at least 3 times daily. Leave a 2 hour break between ice treatments. Wrap the ice pack in a damp towel. Do not place ice directly on the skin in case you sustain an ice burn.
- **COMPRESSION** – help reduce the swelling by applying a compression bandage (e.g. Tubigrip).
- **ELEVATION** – when resting the affected limb, elevate it to help drain the fluid. Ideally this should be placed higher than your heart to be efficient.
- **DRUGS** – medications as appropriate. Analgesia but not NSAIDs unless there is a risk of ectopic calcification. This may occur if the patient has lost >50% of normal knee motion and may require NSAIDs such as Indomethacin or Naproxen.

This line of management should be continued for 72 hours and should be complimented with gentle movement of the affected part. This is crucial to avoid stiffness developing and should involve gentle bending and straightening of the limb with muscle activation.

In summary, a good regime, three times daily would be:

- Ice / stretch / strength
  - 10-20 mins icing
  - 6 × 20 secs stretch
  - Strengthening
    - Isometric – tighten and hold for 5 secs; 3 × 12 repetitions (reps)
    - Concentric – through range of movement; pain free; 3 × 12 repetitions (reps)
- Physiotherapy has a role in the above and also with some taping techniques
- Use alternate, pain-free exercise
  - Maintain fitness
  - Psychological benefits
  - Aerobic exercise is associated with reduced pain perception

Dr John Best – Sport and Exercise Medicine Physician

Spotlight on Dr Kwan Yeoh

Dr Yeoh practises general orthopaedic surgery with a special interest in hand and upper limb conditions. He is proficient in both open and arthroscopic surgery, and is committed to finding the best solution for his patients.

Dr Yeoh completed his medical degree at the University of Sydney in 2000 and his orthopaedic training in January 2010. He then undertook further postgraduate training in Canberra and London Ontario, Canada. His Clinical Fellowship in Canberra specialised in upper limb and knee surgery, while his year in London Ontario specialised in hand and upper limb surgery through the world-renowned Hand and Upper Limb Centre.

In addition to clinical work, Dr Yeoh was instrumental in research projects into elbow arthroscopy and distal radius fractures. He also gained a commendation from the University of Western Ontario for his role in education of medical students.

Dr Yeoh is located in our Concord, Hurstville and Randwick rooms.

Patient matched surgery - Total Knee Replacement

The early results of this exciting new technology are very promising. Patient matched surgery allows accurate cuts and implant placement which should improve the end result of the operation.

Total knee replacement is probably the only operation that has been shown to be cost effective for the community. It restores function to patients, reducing their reliance on other people and therefore reduces the burden on society. Six months after joint replacement significant improvements are seen in global health and in functional status[1]. Currently it has better than a 95% success rate with most implants lasting up to 15 years.

TRADITIONAL SURGERY

Knee replacement has been around since the 1970's. Unfortunately the improvements in cutting guides (making them more accurate and easier to use) have not removed the need to instrument the patient's intramedullary space. In order to judge alignment and rotation, metal rods are inserted into the patient's femoral canal (and sometimes tibia) during surgery. This often results in fat embolism and blood loss and occasionally allows malrotation of the components.

COMPUTER ASSISTED SURGERY

In the last five years or so new technologies have been used to improve the alignment of the prosthesis during the surgery. Tools to measure how accurately we are able to implant the prosthesis have improved tremendously and this should result in better outcomes for patients.

We know that if an implant is inserted more than three degrees away from it's optimal position then it tends to wear out faster. Alignment of the prosthesis can be difficult to judge when using a small incision around the knee.

Computer assisted surgery was a major breakthrough because it allowed the surgeon to measure the alignment of the implant during the operation for the first time. Unfortunately the computers did not help control the rotation of the implant and only partly reduced the likelihood of creating a fat embolism. The disadvantage of using computer assisted systems is that they require extra instrumentation, lengthen the surgical time and create extra potential complications for the patient (such as a fracture where the guide pins are inserted). The hospitals also have to buy expensive computer systems and an extra person is required at each operation to run the computer.

PATIENT MATCHED SURGERY

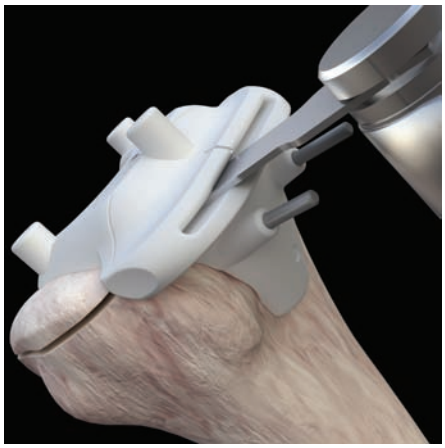
The next generation of computer assisted surgery attempts to address these short comings. Computer analysis is now used in the planning stage of the surgery rather than during the operation itself. This is called "patient matched instrumentation" and no longer requires the previous expensive computer systems in the operating theatres or staff to run them. Slightly more effort is required from the surgeon before the operation but this is more than compensated for by having a quicker and easier operation

WHICH COMPANIES?

Currently the main companies using this technology are: Smith & Nephew's Visionaire Patient Matched System; OtisMed Custom-Fit Knee Replacement System; Depuy Tru-Match Personalized Solutions for Knee Replacement; Biomet Vanguard and ConforMIS Patient Specific Knee Implants but most companies are following suit.

WHAT IS PATIENT MATCHED INSTRUMENTATION?

The patient has an MRI and long leg Xray of the knee performed. The data from these images is processed by an engineer (with input from the surgeon) and a physical model of the patient's bone is created. Measurements of the bone model are taken and the exact size of prosthesis to be implanted can be calculated before the surgery. Based on these models (and the surgeons clinical examination of the patient); a cutting block is generated for the patient. The cutting block guides the surgeon to cut off the exact amount of bone that will be replaced by the implant.



Saw cutting through femoral block.

COST SAVINGS

Significantly less equipment needs to be sent to the hospital because the exact size of the prosthesis to be implanted is known before the surgery. Less instrumentation is required during the surgery and so sterilization and courier costs are reduced. The blocks are shipped sterile for use during the operation.

ADVANTAGES DURING THE SURGERY

During the surgery a standard (or slightly smaller) approach is undertaken to the knee. The block 'locks into place' on the femur in the exact position planned prior to the surgery. Since the block can only fit correctly in one position less exposure of the bone is required than was required for traditional surgery. This ensures that the alignment and rotation are correct with far less tissue trauma.

Tibial cut through block with bone saw.

Traditionally 6 blocks were used to check alignment and rotation but using the femoral cutting block eliminates the need to perform these steps. The surgery is quicker and reduces the chance of a fat embolism by eliminating instrumentation of the femoral canal. This reduces blood loss and surgical time which should lead to faster recovery and less pain. The surgeon is assured of good alignment and rotation and the patient has a shorter anaesthetic which also improves outcomes.

Benefits to the patient include:

- less time in surgery (shorter anaesthetic)
- reduced chance of a fat embolism
- reduced blood loss
- perfect alignment and rotation
- potentially a faster healing time

CONCLUSION

The early results of Patient Matched Total Knee Replacement Surgery are extremely promising. Those of us who have used the technique are convinced that it is a huge improvement over the previous surgical methods.

1. Arthritis Rheum. 1986 Aug;29(8):937-43 - Cost-effectiveness of total joint arthroplasty in osteoarthritis; LIANG MH, CULLEN KE, LARSON MG, THOMPSON MS, SCHWARTZ JA, FOSSEL AH, ROBERTS WN, SLEDGE CB.

Dr Doron Sher
Knee, Shoulder and Elbow Surgeon

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KEY EXAMINATION POINTS

SHOULDER EXAMINATION SERIES PART 2

Examination of the Shoulder for Rotator Cuff Disease

ANATOMY OF THE ROTATOR CUFF

Rotator cuff tears most commonly begin with the supraspinatus, resulting in weakness in external rotation. Subscapularis tears result in internal rotation weakness. The physical examination for a rotator cuff tear will serve to isolate out these muscles to test their function. A patient with an intact rotator cuff will be able to resist the examiner's force during strength testing. When a patient is unable to resist, weakness is noted.

If the patient is in pain a local anaesthetic INJECTION into the subacromial space can numb the area, eliminating pain so that rotator cuff power can be accurately tested.

Xrays are necessary to rule out arthritis and assess the acromion and joint position. A MRI arthrogram is the gold standard to assess a rotator cuff tear. Ultrasound is not a useful tool for surgical decision making.

WHERE IS THE SOURCE OF PAIN?

Shoulder pain may originate from pathology in the neck. Pain is REFERRED to the shoulder and can make diagnosing the source difficult.

Examination of the shoulder begins with the neck. The patient is asked to extend the neck and tilt from side to side. This is known as the SPURLING MANOUEVRE. This movement puts pressure on the nerves exiting the neck and will reproduce the pain if the problem is in the neck rather than the shoulder.

Rotator cuff tear pain is elicited with movements of the glenohumeral joint. Impingement tests known as the NEER and HAWKINS sign are used to demonstrate this pain. These help to diagnose impingement, calcific tendinitis, adhesive capsulitis, or rotator cuff tears, but they do not prove the presence of a rotator cuff tear.

NEER SIGN – The arm is slightly internally rotated with the thumb pointed down. The shoulder is forward flexed with the elbow straight. Pain occurs at the acromion with a positive sign. *(figure 1)*

HAWKINS SIGN – With the shoulder forward, the elbow is flexed to 90 degrees and the arm is further internally rotated. A positive test produces pain near the acromion. *(figure 2)*

HOW ARE DIFFERENT SHOULDER DIAGNOSES DIFFERENTIATED?

RANGE OF MOTION TESTING – Testing Active and Passive motion helps to differentiate a rotator cuff tear from adhesive capsulitis or glenohumeral arthritis. PASSIVE motion of the shoulder is generally maintained with a rotator cuff tear and restricted in the other entities. ACTIVE motion will be limited as the torn rotator cuff limits the patient's ability to move the shoulder in all ranges of motion. If the problem has been present for some time secondary stiffness can occur.

STRENGTH TESTING – The rotator cuff provides power to shoulder movement, and a tear will result in weakness. The earliest signs of weakness will be evident in an external rotation strength test *(figure 3)*. With the arms placed at the sides and forearms forward, the patient is asked to externally rotate against the resistance of the examiner. The examiner pushed inward with both arms, and a difference in power is noted. The arms are placed about 30 degrees from straight to the sides, elbows straight and thumbs pointing downward (Empty Can Test) Any weakness is noted. *(figure 4)*

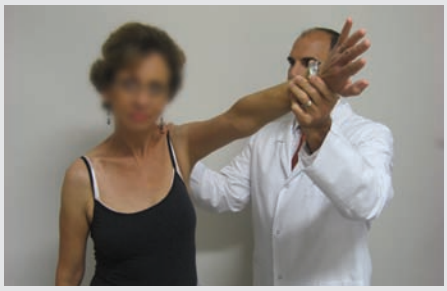
DROP ARM TEST – With a very large tear, the patient may lose the ability to lift the arm against gravity. The arms are held in the plane of the scapula at 90 degrees, and the patient is asked to slowly lower their arms to the side. With a large rotator cuff tear the patient will have trouble moving slowly, and the arm will quickly drop.

HORNBLOWER'S SIGN – This specific test demonstrates a very large rotator cuff tear. The arm is abduction 90 degrees and the elbow flexed. The patient is unable to keep the arm externally rotated, and it falls forward in a position that appears like a hornblower's position. This tests isolates infraspinatus, which is the main driver of external rotation. A positive test confirms a massive tear and significant loss of function of the rotator cuff. *(figure 5)*

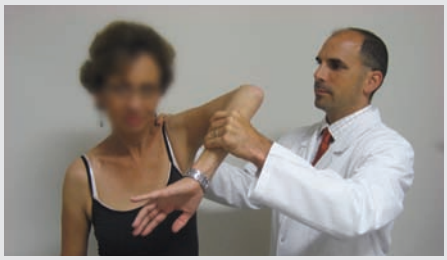
SUBSCAPULARIS TEARS – These tears result in loss of INTERNAL rotation strength, and should be looked for as they can occur in isolation.

LIFT OFF TEST – The hand is placed on the lower back, palm outward, and the patient is asked to lift the hand off the back. Inability to do so represents weakness of the subscapularis. *(figure 6)*

Todd Gothelf
Foot, Ankle, Shoulder Surgeon



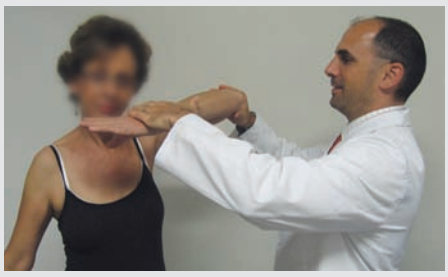
Neer sign (figure 1)



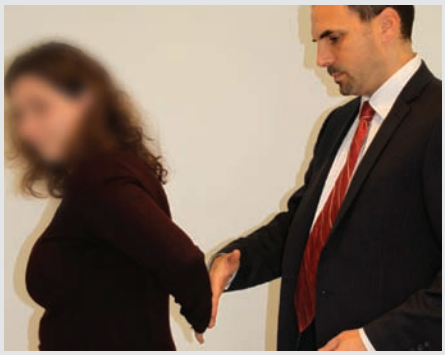
Hawkins sign (figure 2)

External rotation strength test (figure 3)

Empty Can test (figure 4)



Hornblower's sign (figure 5)



Lift off test (figure 6)

Orthopaedic Surgeons and their Interests

LOCATION	SURGEON	SPECIALTY
CONCORD 47-49 Burwood Road, Concord NSW 2137 Tel: 02 9744 2666	Dr Todd Gothelf	Shoulder, Foot & Ankle
	Dr John Negrine	Foot & Ankle (Adult)
	Dr Rodney Pattinson	Paediatrics and General Orthopaedics
	Dr Doron Sher	Knee, Shoulder and Elbow
	Dr Kwan Yeoh	Hand and Upper Limb and General Orthopaedics
HURSTVILLE 2 Pearl Street, Hurstville NSW 2220 Tel: 02 9580 6066	Dr Jerome Goldberg	Shoulder
	Dr Todd Gothelf	Shoulder, Foot & Ankle
	Dr Andreas Loefler	Spine, Trauma, Hip and Knee
	Dr John Negrine	Foot & Ankle (Adult)
	Dr Rodney Pattinson	Paediatrics and General Orthopaedics
	Dr Ivan Popoff	Shoulder, Knee and Elbow
	Dr Allen Turnbull	Hip and Knee
	Dr Kwan Yeoh	Hand and Upper Limb and General Orthopaedics
PENRITH Level 3, 1a Barber Avenue, Kingswood NSW 2747 Tel: 02 4721 1865	Dr Todd Gothelf	Shoulder, Foot & Ankle
RANDWICK 160 Belmore Road, Randwick NSW 2031 Tel: 02 9399 5333	Dr Jerome Goldberg	Shoulder
	Dr Todd Gothelf	Shoulder, Foot & Ankle
	Dr Andreas Loefler	Spine, Trauma, Hip and Knee
	Dr John Negrine	Foot & Ankle (Adult)
	Dr Rodney Pattinson	Paediatrics and General Orthopaedics
	Dr Ivan Popoff	Shoulder, Knee and Elbow
	Dr Doron Sher	Knee, Shoulder and Elbow
	Dr Kwan Yeoh	Hand and Upper Limb and General Orthopaedics

Sport & Exercise Medicine Physicians

PHYSICIAN	LOCATION	PHYSICIAN	LOCATION
Dr Paul Annett	Hurstville	Dr Mel Cusi	Concord I Hurstville I Randwick
Dr John Best	Randwick		

ORTHOSPORTS WIN SUSTAINABILITY AWARD!

Orthosports Concord rooms are delighted to have received the Access award for Canada Bay Council's Sustainability Awards. Canada Bay Council states that "all the finalists have made important contributions to our community but the winners represent some of the most outstanding achievements this year".

"The Wendy Nolan Perpetual Trophy and Access award for business profiles local business owners who excel in accommodating the needs of people with limited accessibility. The winner was Orthosports who are being recognised for offering a range of access facilities. These include electric doors, ramps to consulting rooms and a range of facilities for disabled people. The staff are helpful and aware of the needs of People with disabilities".

"The awards are important to Council to shine a spotlight on the remarkable contributions and investment people and groups are making".

Above: Orthosports Concord Rooms

Left: The Wendy Nolan Perpetual Trophy and Access Award

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