The role of NSAIDs to treat many musculoskeletal injuries / sports injuries is questionable

There is growing research evidence to suggest that NSAIDs may have adverse healing effects on tendons (1,2), muscles (3), ligaments (4) and bone fractures. At the very least, their use remains unsubstantiated (5-7). Consequently, many of our elite athletes are being discouraged against their use for sports-injuries i.e. muscle, tendon and ligament injuries.

What are NSAIDs?
Non-steroidal anti-inflammatory drugs (NSAIDs) are the most prescribed medications for treating conditions such as arthritis and sports injuries. Most people are familiar with over-the-counter, non-prescription NSAIDs, such as aspirin and ibuprofen. Anti-inflammatory medicines are drugs with analgesic and antipyretic (fever-reducing) effects - with higher doses of anti-inflammatory effects. NSAIDs are a widely used class of medication that has three main uses:

- to relieve pain
- to reduce inflammation
- to bring down a high temperature (fever)

Research findings
Although the widespread use of NSAIDs is frequently cited to treat sports injuries, and as such, frequently prescribed by medical doctors, there is growing evidence of their potentially detrimental effects to healing of muscles, tendons and ligaments (8). This is additional to the well documented adverse effects of gastrointestinal, renal and cardiovascular risks. Consequently, some authors suggest automatic use (prescription) be reassessed, since they have, at best, a mild effect on relieving symptoms and are potentially deleterious to tissue healing (9). Examining ‘best practice’ for management of muscle strains in elite athletes, Orchard et al (10) found that NSAIDs may possibly predispose to recurrence of injury due to pain masking - and before the tissue has appropriately healed. Pain represents the body’s natural warning system / defense mechanism.
How NSAIDs work
NSAIDs work by preventing an enzyme (a protein that triggers changes in the body) from doing its job. The enzyme is called cyclooxygenase, or COX, and it has two forms. COX-1 protects the stomach lining from harsh acids and digestive chemicals. It also helps maintain kidney function. COX-2 is produced when joints are injured or inflamed. Traditional NSAIDs block the actions of both COX-1 and COX-2, which is why they can cause stomach upset and bleeding as well as ease pain and inflammation.

Types of NSAIDs
There are two main types of NSAIDs:

- **non-selective NSAIDs** – such as ibuprofen, which block the effects of both COX-1 and COX-2 enzymes

- **COX-2 inhibitors** – such as celecoxib, which only block the effects of COX-2 enzymes

COX-2 inhibitors were designed to treat chronic conditions that cause pain and inflammation without affecting the stomach. Although COX-2 inhibitors have less effect on the stomach, they may be more likely to cause side-effects on the heart compared with traditional NSAIDs. This means that they may be more suitable for someone who is at risk of developing stomach or intestinal problems, but less suitable for those with a heart or circulation problem.

The most commonly prescribed NSAIDs in the UK are:

- aspirin
- diclofenac
- ibuprofen
- naproxen
- celecoxib
- etoricoxib

Conclusion
Although the use of NSAIDs in treating sports injuries has assumed an almost universal acceptance, their use is not without concern. The inflammatory response to injury serves to trigger a repair cascade, and the use of NSAIDs may interfere with this and impede healing. However, certain inflammatory conditions, such as bursitis, arthritis, synovitis and acute disc herniations are probably best treated using anti-inflammatory medications as part of a comprehensive treatment approach.
References


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Graduate Sports Therapist Nick Dinsdale and his daughter Nicola run NJD Sports Injury Clinic in Clitheroe. The family clinic is recognised for its strong ‘evidence-based’ approach to the management of musculoskeletal conditions and ongoing professional development. This often involves research into topics and working with various educational establishments.

Nick specialises in research of lower limb biomechanics, particularly foot function with respect to cycle racing. His research into cycling biomechanics, carried out at Manchester Metropolitan University, has been published across the world (links below). In addition to advising professional cyclists, Nick often delivers private CPD workshops and presents at Conferences. Nick has served on the Executive Committee of The Society of Sports Therapists and has worked with GB cycling teams, Manchester Wheelers, English Fell Running teams and assisting Nicola at Blackburn Rugby Union club.


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