

World Swimming Coaches Association Newsletter

volume 2012 • issue 3

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The Pointe-Claire System

*presented by Justin Finney, coach with the Pointe-Claire Swim Club (Canada)
at the 2003 ascta Convention*

Welcome

Hello, my name is Justin Finney. I am from the Pointe-Claire Swim Club and am here to speak to you all about what had made my club and international success with over 200 national champions, over 100 National Team members, 15 Olympians, 5 Olympic medals and Olympic coaches.

To explain in detail, I would like to introduce you to one of the true pioneers of Canadian and World Swimming: Mr. George Gate. Mr. Gate was born in Carlisle, England on December 11, 1924. He was a big fan of Tarzan movies and the great Johnny Weissmuller, and started swimming in school at the age of 10. It was quite expensive to swim at the indoor pool, and at the age of 14 he started to work so that he could afford to swim. His first swim team was the Border City Swim Club. In 1940 he was the Cumberland and Westmorland champion in the breaststroke, freestyle and I.M. events. He served his country in World War II in the Royal Navy.

When Mr. Gate returned from returned from the war, he re-established himself as the Cumberland and Westmorland champion again in the breaststroke, freestyle and I.M. events. He returned home and went to foresters school in Kirschope Foot, Scotland. Coach had not crossed Mr. Gate's mind at this point in time: he wanted a future in logging and wanted to go to New Zealand for logging.

In 1950, Mr. Gate ended up in Vancouver, BC, Canada, logging and saving his money to eventually hop a ship to New Zealand. He was hurt while logging in British Columbia, and George was offered a job in Ocean Falls, BC as the Aquatics Director.

Ocean Falls

In 1950, George took over Ocean Falls on a small island off the coast of Vancouver with a township of 3,000 people and one car. The pool was 20-yards long and 4-lanes wide, with only 3 working lanes for swimming.

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NOTICE

WSCA Board of Directors
meeting:
July 27, 2013
in Barcelona, Spain.



Responsibilities...

- Mr. Gate was the Aquatic Director and coach, maintenance man, Mr. Fix-It.
- Coaching, teaching lessons were extra that he did without any compensation.

Lesson program / Feeder system

Mr. Gate established a feeder system in conjunction with the school system in Ocean Falls. All the kids in kindergarten would have swimming lessons where they would be taught by Mr. Gate himself who would get in the pool with them and teach. The feeder system proved to be a major success for the future of the Ocean Falls Swim Team.

Innovation

Mr. Gate bought a book by Gilbert Collins and Bell Raki in 1950 documenting the Japanese shoulder roll, among other swimming techniques. Mr. Gate taught these techniques to all the swimmers on the swim team, as well as to the up-and-coming Ocean Falls swimmers in his lesson program. He established a record board with every record: from Provincial to Commonwealth to World record.

Fundraising

Mr. Gate coached synchronized swimming in order to put on swimming shows for the community in Ocean Falls, and to raise money so the swim team could travel to provincial, national and international competition. He also had bingos. Ocean Falls was known as “the Rain Makers” because to this day Ocean Falls receives the highest amount of rainfall every year in North America, with 226 inches. Mr. Gate had a “Guess the Rainfall” lottery that cost \$1. Every year there was a \$100 prize for the person who had the closest guess to the tenth-of-an-inch. The rest of the money was used for the swim team travel expenses.

Ocean Falls results

Between 1950 to 1964, Mr. Gate produced five Olympians out of Ocean Falls: Lenora Fischer (1952, 1956), Allan Gilchrist (1952), Leo Portlans (1952), Richard Pound (1960, the last Canadian finalist in the 100 Freestyle at the Olympics), and former 400 Free World Record holder and 1968 Olympic silver medalist Ralph Hutton.

National Team members	over 100
National Champions.....	over 100
National Team championships	3
Northwest Championships	3

In 1963 Mr. Gate was selected by the Coaching Association of Canada as the Head Coach for the Canadian National Team headed to the Pan American Games.

Montreal Amateur Athletic Association

1964 saw Mr. Gate make the change from Ocean Falls to the Montreal Amateur Athletic Association (MAAA). He took the MAAA team from 16th in 1964 to 7th place nationally in 1966.

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Development of the Pointe-Claire Swim Club

In 1966 Mr. Gate was offered the Aquatics Director's position by the city of Pointe-Claire at the Pointe-Claire Swim Club (PCSC), and he accepted. Mr. Gate was in charge of the first indoor 50m pool complex in Canada in 1966. His first thoughts were: how was he going to coach in a pool this size?" He went straight to work and began with the analysis of the pools programs.

The Beginning

George had a few hurdles to overcome upon his arrival at Pointe-Claire in late 1966. There were two swim clubs that were training out of the pool: one at PCSC and the other at the local YMCA. The Pointe-Claire Swim Club was a parent-run organization with an elitist attitude. The parents committee felt that Mr. Gate should concentrate all his efforts towards producing the elite athletes at the Pointe-Claire Swim Club and not waste his time with a feeder/development system. George realized the incredible potential that surrounded the Pointe-Claire Swim Club and Aquatic Centre which was the summer pool system.

The Summer Pool System (Summer pool Slide)

To understand Pointe-Claire you need to understand the summer pool system. Before George arrived, there was already a thriving summer system on the West Island. It was in demand from the summer pool community that had the indoor Pointe-Claire Swim Club built in 1964. Our Summer season 8-10 weeks.

There are two systems: Northshore Aquatic Association (NAA) and Association of Lakeshore Pools (ALPS). Each system had approximately 20 pools and each with family memberships ranging anywhere between 200-500 families. These pools have a full swim team, water polo team, diving team and synchronized swimming team. These pool also have their own committees and are largely supported by the surrounding cities where they reside. The age groups for the swimming competitions are as follows: 8&Under, 9+10, 11+12, 13+14, 15&Over. For 8&U there are 25s of each stroke and including a 4x25m Freestyle Relay. For the 9+10s and above, there are 50s for all strokes, including a 4x50 Freestyle Relay.

Each system, both NAA and ALPS, encourage swimmers of all ages to participate in the competitions. For most winter swimmers, it is their time to shine, as they

go back to their home summer pool and basically reign supreme. At the end of the summer, there are semi-finals and then a finals competition, where there is a Finals trophy, a Consolation Finals trophy, and a 10&U trophy. These summer pools also employ many swimmers, divers, water polo players and synchronized swimmers as lifeguards throughout the summers.

Recruiting

These summer pools have over 6,000 swimmers competing every summer, 4,000 of which are 10&Under swimmers. It was, and still is, a virtual breeding ground for future swimming champions with mostly all of the Olympians, National Champions, Provincial Champions and so for coming out of Pointe-Claire having belonged to a summer pool.

We still do clinics every year at mostly every summer pool to try and recruit the best young talent to the Pointe-Claire Swim Club.

One vision, not many

When Gorge realized the potential in the summer pool programs, he did not hesitate to get involved. Mr. Gate went and started his own swim club at Pointe-Claire, called the Windmills, to cater to summer pool clientele (mainly a feeder system). He made the rounds of the summer pools and in between the summer of 1966 and 1967, the membership of the Windmills surpassed the membership of the Pointe-Claire Swim Club just off of summer pool recruiting alone.

Then in the summer of 1967, Mr. Gate petitioned the City Council of Pointe-Claire to disband the parents committee and to terminate the rental agreement between the YMCA and the Pointe-Claire Aquatic Centre. He then replaced the parents committee with the Pointe-Claire Pool Advisory Board, made up of a city councilor, local businessmen and former athletes to assist the Aquatics Director and coaching staff with decisions being made in and around the Pointe-Claire Swim Club. This gave him full control over every program in the building.

In 1967, Mr. Gate started the Pointe-Claire Diving Club, because at the time Senior Canadian Nationals were scored both in Swimming and in Diving combined. In 1967 Mr. Gate hired Bill Burke as his As-

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sistant Coach. Bill had a background in strength and conditioning, which Mr. Gate found to be an asset to the program. Bill helped with the club's preparations for the Senior National Championships and also with Olympian Tom Arusoo's preparations for the 1968 Olympics in Mexico City.

The Olympic Way

The next mission was to implement a swimming lesson program that worked in favor for the swim club. The Red Cross was the program being run at Pointe-Claire upon George's arrival. The Red Cross did not recognize certain technical aspects of the modern swimmer. For example, Richard Pound, finalist in the 100 Free-style at the 1960 Olympic Games, was failed by one of his Red Cross instructors because his shoulder roll was considered to be unorthodox and not the proper technique for the course.

The Red Cross program (at that time in Quebec) had a low passing rate of 30%, which Mr. Gate found to be extremely low and was worried about future Swimming talent being discouraged by their low marks and quitting the sport all together. George had a tough decision to make, but eventually had to cut ties with the Red Cross and begin his own swimming lesson program called the *Olympic Way*.

Now the *Olympic Way* is a custom-tailored feeder system. Mr. Gate wanted to give the Pointe-Claire community every opportunity to learn how to swim and, at the same time, implement a feeder system for the Pointe-Claire Swim Club. The *Olympic Way* is a color-coded system: white, white-adv, green, blue, bronze, silver, gold and level 6. The *Olympic Way* is a systematic progression to teach kids of all ages the basic techniques and skills that they would need to learn in order to progress towards the swim team.

We, as coaches at the Pointe-Claire Swim Club, take the time to attend lessons being run on most weekends and scout the young talent that may be coming up through our system.

Innovate... innovate... innovate

You should not be afraid to try new things when it comes to coaching. Mr. Gate was always looking for new ways to motivate his swimmers and give them the necessary edge to be not just one but ten steps ahead of

the competition. He bought books and subscriptions to magazines in order to be completely in-tune with the world of Swimming. To this day, every swimmer in the Pointe-Claire system receives a Swim Magazine subscription that is automatically included in their membership fees. Every coach has their membership to the Canadian Swimming Coaches and Teachers Association (CSCTA) paid for by the club as well as any other coaching association that would benefit the progression of the coach at the Pointe-Claire Swim Club.

Mr. Gate had the first pace clock in Canadian history at Ocean Falls—made out of tin and mounted on the wall on deck. He also experimented with paddles and lycra in the late 1960s-early 1970s. He worked with a parent in the swim club to experiment with ladies nylons and redesigned the suit on many occasions.

Mr. Gate also experimented with hand paddles. First by using tin (which became somewhat dangerous) and next (with the help again of a parent at Pointe-Claire) he cut-up a 4x8 piece of thin plastic and molded it in a stove to have more of a curved shape. These innovations are documented with hand paddles by Dick Hanula and with Dupont owning the rights to the invention of Lycra.

I find it very inspiring that Mr. Gate was driven to experiment with swimming equipment, considering the time frame in which they were conceived.

Fundraising was a major factor in the success at Ocean Falls and is a major part of the Pointe-Claire Swim Club today. Many of our swimmers' club fees are cut dramatically due to the organized fundraising that we have every year. We have a Citrus Drive and we have our kids sell chocolate bars. We have also had the swim-a-thons and car washes, bottle and can drive—just to name a few. Where there's a will there's a way.

Develop Coaches from Within

Coaching is the future to any country/club

In 1974 the Pointe-Claire Aquatic Centre received a major face lift by the city with the addition of a 6-lane, 25-yard pool, full court gymnasium and a weight room (all of which were ahead of its time) to accommodate

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the increasing demand for aquatics in the community. Water Polo and Synchronized Swimming were cut from the program due to a massive demand for lessons, Diving, and of course the swim team. With the added responsibility Mr. Gate had to make one of his toughest decisions, and had to pass on the head coaching duties to Dave and Tom Johnson and assume the full role of the Aquatics Director position.

Mr. Gate realized at an early age that there are many different aspects to the success of any program, yet the most important is the coaching aspect. He put all his faith in his coaches, yet made sure that they all understood the one vision that had been so successful.

Hand-picked his coaches through every aspect of the system

The system has been established. Mr. Gate not only produced swimmers but had also stood the test of time where his hard work and dedication was passed on to his swimmers who were now becoming coaches in his system. Mr. Gate was able to mold the coaches through their years of swimming at Pointe-Claire to be able to pass on the tradition of fast swimming.

Guided the coaches/belief in the system

Mr. Gate did not give you a position on his coaching staff and leave you to fend for yourself. He took the time to guide you and talk to you about the importance of coaching the person and not just the swimmer. He had many philosophies which he instilled in all his coaches. He believed that coaching is an art. We tend to pay more attention to the technology of swimming than we do to the art of it.

The question that Mr. Gate feels is very important to ask ourselves is: what would we do if it were my son? Belief in the system was extremely important to the club's progression. "You have to believe in what you are saying. If you don't, then your swimmers won't believe in you or the system."

Parental education

To this day Mr. Gate feels that the club could have done a lot more to educate the parents in the club. It is extremely important to have a working relationship with your parents. By working with the parents of the kids that you coach, you get to know them and this adds to the belief in your system because the talk at home is

more positive towards a program that the whole family understands. This is not to be mistaken with a parents committee. Have information sessions with your parents to inform them on the progress of their swimmers and the group as well. Usually all the news you give them is good news, and this brings a great sense of satisfaction for the sacrifice that your parents make every day. Have parents' nights at the club or arrange a dinner outside the club where you can get to know your parents a little better.

Family aspect

It is important to keep a positive and sound relationship with the coaches on your staff. Always keep an open line of communication with your coaches, where they can talk to you about anything that may be on their mind. Have staff outings where you are able to forget about swimming and get to know each other on a personal level. Give your coaches every opportunity to learn. Make them a part of your swim club family.

Coach the person

Again, treat your swimmers as you would your own son or daughter. You will get a lot more out of your swimmers as they will genuinely know that you care about them and not just their swimming.

Where are we now?

- 14 coaches
- 300 swimmers in swim team
- 138 10&U swimmers
- 162 Age Group, Youth and Senior swimmers
- over 200 National Champions
- over 100 National Team members
- 15 Olympic swimmers
- 5 Olympic Swimming medals
- 12 Olympic coaches
- 30,000 *Olympic Way* lessons taught each year
- teaching staff of over 200 instructors

Let's not forget the divers...

- 3 Olympic coaches: Don Webb (1976-1996), Liz Jacks (1984, 1988) and Yi Hua Li (1996, 2000)
- 10 Olympians
- 2 Olympic medals
- Over 110 National Champions
- Over 50 National Teach championships won

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What worked

- Holistic system: The system was, and still is, designed for everything to work for the swim team.
- Built-in coaching system: The system produces its own coaches through its swimming program with many different programs to choose from (*Olympic Way*, swim team, etc.)
- Produced results: The results speak for themselves.

What didn't

- Best talent gets recruited: Our coaches move-on to other projects. Our swimmers leave for American universities. English Montreal universities are downtown.
- System had not been adopted country-wide. The *Olympic Way* system has been often imitated but never duplicated. The country is on its own system, which is a major problem for Canadian swimming at the moment.

Future directions

- Retain and recruit Senior swimmers
- Establish a local university team
- Get international experience to swimmers/coaches
- Home representation: 2004 Olympics, 2006 Commonwealth Games, 2008 Olympics

Conclusions ("Take Aways")

- Create a feeder system
- Develop your own coaches; hire from within
- Coach the person
- Don't be afraid to innovate

u p c o m i n g c l i n i c s

Portugal

APTN Congress 2013

(Portuguese Swimming Coaches Association)

April 27 & 28 • Guimarães

New Zealand

NZSCAT Conference 2013

(Swimming Coaches & Teachers of New Zealand)

May 21-25 • Queenstown

http://www.nzscat.org.nz/Information/General/Events_Diary.htm

Australia

ascta Convention 2013

(Australia Swimming Coaches & Teachers Association)

May 7-12 • Gold Coast, Queensland

http://www.ascta.com/customdata/index.cfm?fuseaction=display_image_listing&CategoryID=5175&itemLayout=1&headerselector=3&OrgID=3429

USA

ASCA World Clinic 2013

(American Swimming Coached Association)

September 3-8 • New Orleans, LA

Germany

DSTV Conference 2013

(German Swimming Coaches Association)

May 10-12 • Frankfurt

<http://www.dstv-online.de/tagungen/tagungen-single-view/article/ausschreibung-zur-42-trainer-fachtagung-2013-der-dstv.html>

United Kingdom

BSCA Conference 2013

(British Swimming Coaches Association)

September 26-29 • location to be announced

To Suffer Pain

by Edward H. Nessel, RPh, MS, MPH, PharmD.

Overview

There are several types of pain, all of which can bring the sufferer/endurer to a state of great unease. Pain is one of the most common reasons that patients (athletes, here) seek medical attention or at least guidance from the coaching and therapy staffs with damage to the knee being the largest reason for medical visits. Just being alive qualifies most of us to have had experience with pain in one form or another and to varying degrees...maybe to help us reach a higher level of existence and grow from it, maybe to unfortunately “suffer the slings and arrows” about which Shakespeare wrote. The acute and/or chronic physical pain of injury, illness, and constant intense vigorous training along with the “combat” of competition, and the emotional, deep-stabbing psychological trauma that being alive can eventually bring our way (less if we are lucky, more if we are not) provide the proving ground to build our character and resilience. It has been said that adversity builds character. I believe it only brings out what innate character we have. Pain perception, medically speaking, is a very complex process in which multiple activation pathways are mediated by numerous chemical transmitters in both the periphery (at the sight of injury away from the spinal column and brain) and in the central nervous system (CNS), which comprises the spinal cord and brain).

As to the physical kind of pain which is the main thrust of this article, I have often told my athletes “if you have pain, it means you are still alive so be glad for the feeling.” This works most of the time, but not always... especially as it relentlessly mounts through a workout, or a season, or a lifetime. Since I, in my mid-sixties, indulge in the same “tortures” I dish out, dealing with discomfort progressing into pain is almost a daily occurrence when I train. To train sufficiently to induce pain presents a two-edged sword. The body’s all-important enzymes and neural and muscle tissues hopefully will adapt the way we want when appropriately stressed out of the comfort zone, but there is the always-present caution that excessive vigorous activity can deplete energy reserves and cause the athlete to suffer excesses where over-reaching progresses into over-training and then into frank athletic fatigue. This is a sure way of putting the athlete in physical harm’s

way to sustain injury and/or illness which could ruin a serious training schedule. Bad things can happen to an athlete here where the appropriate balance of hard work and the most important part of training, rest and recuperation, are lost during the workout regimen. Sometimes, physically, less is more...and better.

The perception and handling of pain should be lead by the individual’s motivation and focus in the moment. His present-state physical makeup, his past experience dealing with the actions leading up to pain production during training and competition, and his all-around emotional resilience should all blend together like a healthful “cocktail” to produce the desired results. The various causes of pain, their effects on the body and the psyche, and their treatment will be the main topics and take-home points discussed in this article.

The physiological mechanisms and definition of pain

The process of pain transmission from an affected sight to its perception in the brain, as mentioned above, involves many neural pathways and neurotransmitters within the central and peripheral nervous systems, either over thin myelinated (protected coating of a fatty-like substance) A-delta or non-myelinated C fibers.. An external stimulus causing the pain activates pain receptors (called *nociceptors*), which then produce an electrical action potential (impulse) that is transmitted along *afferent* (going towards the spinal cord) nerve fibers. These fibers are differentiated by the type of pain they transmit, whether they carry signals *quickly* that delineate well-defined sharp, localized pain (A-delta), or *slower* dull, aching, poorly-defined diffuse pain (C-fibers), and the transmitters included several inflammatory mediators including prostaglandins, bradykinin, serotonin, and histamine. There are also several peptides such as Substance-P which reside within the primary pain fibers signaling damage to a specific area. The electrical impulse carrying the pain signal then travels to a section (dorsal horn) of the cord where pain neurotransmitters such as glutamate and Substance-P are released. The transmission then con-

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tinues up the spine via ascending pathways to higher areas of the brain where it is consciously experienced and deciphered. Once the brain takes hold of these signals it tries to lessen the pain by causing the release of inhibitory stimuli (endorphins) through descending pathways down the spinal cord. This mollifying of pain is accomplished through a variety of neurotransmitters including endogenous opioids, serotonin (5-hydroxy-tryptophan, 5-HT), norepinephrine (NE), and gamma-amino-butyric acid (GABA). Researching these chemicals has led to the use of other classes of medications including anti-depressants and anti-convulsants for chronic pain.

The actual substance of pain can be divided into two categories: a. *nociceptive* and b. *neuropathic*. The former is more commonly known as acute pain. And it is further categorized as somatic and visceral pain. Somatic pain usually arises from muscle (spasms, tears, swelling) or other tissue injury...the bane of athletes. It is well localized and is often described as aching, throbbing, or shooting sensations. While visceral pain is often referred from an internal organ, This type of pain (somatic & visceral) is the more common associated with vigorous training and competition and is treated with the usual suspects such as narcotics, non-steroidal anti-inflammatory drugs (NSAIDS) physical measures and even anti-inflammatory steroids.

Neuropathic pain is physiologically different from nociceptive pain, warranting a different approach with different pharmacologic agents for treatment. The mechanism of neuropathic pain is more complex and not as well understood as that of nociceptive pain. The predominant theory today is that neuropathic pain occurs as a result of dysfunction of, or damage to, both the central (brain and spinal cord) and peripheral (rest of body) nervous systems. There can be a malfunction in the central nervous system (CNS) which can lead to several different processes (increased cell firing, decreased inhibition of neuronal activity, and increased generalized sensitization) that are responsible for chronic pain. Neuropathic pain is often described as burning, shooting, tingling, and possibly accompanied by numbness. *Hyperalgesia* (the exaggerated response to normally noxious stimuli) and *allodynia* (the painful response to a normally non-painful stimulus) often occur in neuropathic pain syndromes. Chronic pain can present as a manifestation of both nociceptive

and neuropathic pain, suggesting the need for a combined pharmacologic approach for optimal treatment.

Chronic pain and treatment

This type of pain can become a “resident partner” to a long-standing training regimen, or it can be the remnant of a serious traumatic episode from years previous. And it can also be the most difficult to treat and eliminate. When the pain of an injury lingers past the expected healing time and for longer than three months, it is classified as chronic. And when the psychological component of having to carry the expected daily burden of pain, in varying degrees, follows you everywhere, it can many times become more debilitating than the actual physical component. The Nike Company has utilized a very simple motto, and I believe it has merit: “just do it!” With the appropriate medical and physical therapy having been applied, often, simply moving over a building period of time and with increasing effort can lessen the immediate effects of pain. *If you choose to do nothing, you will surely be able to do nothing.* Usually, chronic pain swells and ebbs like waves out at sea. With the distraction of physical movement and the goings-on of your immediate surroundings and the mental focus needed to keep progressing in a training program, chronic pain can temporarily lessen in overall intensity and duration; it can then rise again either during exercise or immediately after or even be delayed several hours. The threshold of neurological stimulation from the injured site through the central nervous system that actually signals the presence of pain can be temporarily elevated by endogenous (from within) chemicals (endorphins) and partially or totally blocked by pharmaceuticals (NSAIDS, acetaminophen, true natural and synthetic opioid narcotics). There are also classes of drugs that act outside of their intended use to modify in a positive way the brain’s ability to perceive pain. Though these medications might present with side effects that could possibly hinder an athlete to varying degrees and dull the senses, the overall consensus is that if the reduction in constant pain is perceptible and worthwhile, some untoward effects are an acceptable price to pay.

The Use of Antidepressants

This class of drugs has been used for many years to

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treat pain. The structure of the working chemical molecule in this particular type of medication is called a *tri-cyclic antidepressant* (TCA). Generic names include amitriptyline, nortriptyline, desipramine, and imipramine. Their role in pain modulation correlates with their ability to increase the amount of circulating inhibitory pain neurotransmitters (norepinephrine, NE and 5-hydroxy-tryptophan, 5-HT) through re-uptake inhibition. The analgesic effect occurs independently of their antidepressant activity since it has been shown that smaller doses work quicker (days vs weeks) to reduce pain than what is required to act as actual antidepressants. Positive effects for treating neuropathic pain has been seen in many studies and are limited by how well the patient can tolerate *anti-cholinergic* side effects (sedation, dry mouth, blurred vision, urinary retention). With this in mind researchers have developed newer antidepressants that have less untoward effects. Venlafaxine (Effexor) became one of the following generation of antidepressants and released neurotransmitters in varying amounts depending up its concentration in the blood. A popular newer choice, developed in 2004 called duloxetine (Cymbalta), has showed a good profile for increasing a balanced release of antidepressant and analgesic neurotransmitters and has shown good effects against depression, the neuropathic pain of diabetes, and the pain of fibromyalgia. The other serotonin uptake inhibitors like Prozac, and Zoloft are good only for depression since they do not release norepinephrine in large enough amounts which is needed for the pain-killing effect.

The Use of Anticonvulsants

A few examples (carbamazepine, gabapentin, and pregabalin) of anti-seizure medication have been found useful to treat neuropathic and other types of chronic pain. They have several mechanisms of activity which include inhibition of electrolytes sodium and calcium, allowing increases in GABA, and inhibition of certain pain receptors (glutamate) and work at various sights to block pain transmission to the brain. Gabapentin (Neruentin) and pregabalin (Lyrica) are classified as second-generation anticonvulsants and are typically better tolerated with fewer drug interactions than first-generation anticonvulsants (e.g. carbamazepine).

Topical Therapy

With patients suffering a more localized chronic pain syndrome the application of certain medications right

to the skin over the troubling area has proven a workable alternative. If we can derive benefit yet lessen side-effects with local topical pain-killing medication, the efficacious-to-danger ratio becomes quite favorable. The administering of topical NSAIDS has shown much less adverse reactions and has spared the kidneys, stomach, and heart from enduring and suffering potentially serious consequences of usage. Also, the application of methylsalicylate or capsaicin (a derivative of red chili peppers which blocks the release of the pain transmitter Substance P) in cream form and the localized topical application of a potent anesthetic such as lidocaine have proven quite effective with repetitive use.

Pain from athletic trauma and sequelae over the years

Ask any athlete, and you will find the medical dictum: “the body never forgets” rings true many more times than not. The higher the level of competition and attendant training, the surer the case for injury development and then the necessary rehabilitation. As example, there is almost a 100% injury rate in the NFL. This, of course, means that eventually, almost every single player at the highest level in the sport will have suffered a major injury (or series of injuries) that will have a residual effect. Some of my heroes of the gridiron of time past can not even walk or stand alone without support. I am sure that some days even their eyebrows hurt.

Immediate Physical Treatment of Injury

If, say, the knee were to get damaged, the cartilage making up a good portion of the space of the joint, has good blood supply but no nerve innervation. Therefore, any pain that would result is from collateral damage to tissue surrounding the knee or entering the joint proper. This holds true for any joint having to handle the weight of the body or withstand intense movements. Running and jumping places up to eight to 10 times body weight on a supporting joint with each “hit” on a hard surface.

There has been a standard protocol for several years that has proved effective for immediate treatment of a skeletal-muscular injury. It is called RICE...**R**est, **I**ce, **C**ompression, **E**levation. This is a first-line method

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	Cold / Ice Pack Therapy	Heat / Heat Pack Therapy
Timing	use immediately and up to 72 hours after injury, even after swelling ends	can use as soon as 24 hours or after 72 hours after swelling ends
Regimen	ice the affected area for 15-20 minutes up to 3-5 times daily, protect skin from freeze burn	apply direct heat up to 3-5 times daily; protect skin from heat burn
Effects	decreases blood flow to injury site which decreases inflammatory cells from acting and lessens from acting and lessens swelling & pain	Increases blood flow to injury and allows for debriding cells to reduce inflammatory site
Equipment	ice bag, ice cup, frozen gel pack or cool whirlpool bath	dry or moist (best) heating pad, hydrocollator pack, heated gel pack, warm to medium-hot bath
Precautions	ice packs can be extremely cold and should only be applied over clothing, washcloth or towel, not directly to skin; caution with poor circulation, diabetes, nerve damage or paralysis that allows for skin insensitivity	if hot enough, 1 st , 2 nd , or even 3 rd degree burns can arise; use caution as with cold packs and never while patient sleeps

of athletic-injury treatment. The closer in time to the injury, the better; certainly within 24 hours of incident. Heat also has benefit but should be utilized differently. The chart above outlines the recommended treatment with both temperature variants.

Pharmacological Treatment of Pain

The medication treatment indicated for athletic injuries include various choices. Probably the most reached-for and readily-available are the group of NSAIDS... non-steroidal-anti-inflammatory drugs. This class started way back with the discovery by Frederick Bayer in 1899 of the chemical acetyl-salicylic-acid (ASA). Better known as aspirin, science knew that it worked for pain and fever but not how it worked at the cellular level. It took many decades to finally find its mechanism of action, and once this was elucidated, various pharmaceutical houses developed various alterations in the basic active molecule. NSAIDS' main action is to prevent the formation of prostaglandins, particularly prostaglandin E-2. Local injury or inflammation increases the formation (and its activity) of the enzyme cyclooxygenase-2 (COX-2). This, in turn, leads directly to prostaglandin E-2 synthesis with its attendant feeling of increasing pain. Prostaglandins can facilitate the transmission of pain signals from the site of damage and into and up the spinal cord to the brain due to increasing amounts of COX-2 formation from pain stimuli. So, if we connect the dots: stop the mediators of pain with readily-available medication, then dealing with pain and injury are easily handled. But, as with most things in life, this sword has two very sharp edges.

Prostaglandins are also needed by the body for protection in several areas. They are needed to ensure the constant formation of protective cells in the stomach to obviate the possibility of bleeding ulcers. They are also needed to ensure adequate blood supply to the internal organs especially the kidneys. When excessive use of NSAIDS are consumed for extended periods, bleeding ulcers and organ failure are very real possibilities. In fact, this class of drugs is the single greatest cause of kidney failure in the United States. And an infamous member of this group, Toradol, has become the bane of the National Football League. Way too many players are on it several times per week throughout their playing careers, especially on game day, where untoward side-effects are now becoming prevalent. The potential for excessive bleeding can also result from this class of drugs as the platelets are bound and made functionless while the drug circulates. When it leaves the body, the platelets are again rendered functional. But this is not as dangerous as aspirin which binds with platelets for their lifespan of about seven to 10 days. Imagine the grave possibility if a player sustains a severe head injury with Toradol circulating through his system... bleeding into the brain.

Interestingly, acute pain usually decreases and even ceases before the body has completely healed because it is so dependent on these inflammatory sensitizers to give out signals of injury. Mother Nature could be making a physiologic mistake here by giving a premature false sense of recuperation and repair to the athlete and coaching staff.

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Based on cost, safety, and efficacy, acetaminophen (Tylenol and others) should be the first choice to treat mild to moderate pain. Adverse effects are minimal if dosages are kept appropriate and no alcohol is consumed while taking this drug. This combination has proved deleterious to the liver as have excessively large doses of the drug.

When pain is excessive as with proximity to an injury or when there is an acute exacerbation of pain, the opioid analgesics provide the best relief. Most are aware of the sequelae of effects and should be aware of the dangers for excessive and prolonged prescribing. The attendant sedative effect while taking opioids and handling dangerous machinery and driving are a prescription for disaster. Also, the physical and psychological potential for dependency is ever-present and is strongly influenced by dosage, length of time of administration, and the emotional makeup of the patient. Having a single prescriber and pharmacy dispenser can help ensure an appropriate regulatory mechanism to prevent abuse. Though propoxyphene (Darvon, Darvocet, etc) and codeine have been thought of as not having much potential for abuse, over time and with varying situations, they can, indeed, lead the patient to strongly desire their consumption.

Glucocorticoids present as the most powerful *in situ* (at the site of injury) administration of medication. These anti-inflammatory steroids act to numb the affected area, reduce inflammation and actually remove it from the injured site, and provide for a sense of well-being even as the injury remains fresh. This can become the “ideal” preparation to get an injured athlete ready for immediate play for an important competition. But not ideal enough to actually help the athlete heal appropriately over time and with rehab if needed. This class of medication does have a place of purpose if a chronic inflammatory condition flares or lingers beyond sufficient healing time as long as other factors are taken into consideration to allow proper healing over time.

Supplementation with natural physiologic substances may help the body withstand debility and pain and help in the total healing process as well, but all studies have not proven conclusively their absolute efficacy. Hyaluronic acid (HA) is a substance in joint fluid that gives it viscosity to act as lubricant for joint mobility and function. With a chronic inflammatory or osteo-

arthritic condition of a joint along with the aging process, the molecular weight and concentration of HA is diminished. This allows for bone and cartilage to rub and grind and suffer reduced capacity for appropriate movement. Pain will arise with inflammatory presence. Having HA injected directly into a damaged joint will provide almost immediate effect. Two products, Hyalgan and Synvisc, are viscous fluids that are administered in a series of injections. The injectable is cleared by the body after only a few days but pain relief lasts for up to six months. Oral supplementation with HA has shown modest positive effects but only after several weeks of use.

Glucosamine and Chondroitin have received much public attention and are being sold almost everywhere there are shelves for such products. Glucosamine is a precursor to glycosaminoglycans, an important substance making up cartilage, and chondroitin is a component of the same substance. They have proven efficacy over time, and the pain relief they provide is almost as strong as many of the NSAIDS. In living tissue these substances can stimulate certain cells to help synthesize proteoglycans that make up cartilage and even inhibit an enzyme that can break it down. Whether any of these oral supplements actually work their claimed miracles in joint tissue is more testimonial than physiological.

Pain comes free with breathing. Most times it is an immediate signal that a definite problem exists right here and now. There are several types of pain that absolutely must not be ignored, and appropriate medical advice should be sought quickly or dire consequences can ensue. Athletic injuries that produce debilitating pain need to be diagnosed and treated with the respect they have garnered over the years. Medications that relieve pain are like blessings from the Gods. They make, at least temporarily, everything alright. What to do with them and how and when to administer them are what good medical care and athletic training are about.

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