

# The World Swimming Coaches Association Newsletter

Vol 08 Issue 2

## CONTENTS

**6 Steroid Abuse in Athletes: A Very Bad Choice**  
By Edward H. Nessel,  
R.Ph, MS, PPH, PharmD.

**10 Nations with WSCA Members**  
(As of Feb. 2008)

**10 Upcoming WSCA Clinics**

**11 How to live a committed life**  
By Kamal Vinodrai Shah,  
Kenya

## Train the Way you'd like to Race...

By Stephan Widmer, ASCA World Clinic 2007 - Head Coach  
QLD State Swimming Centre - Queensland Academy of Sport

### Let me introduce myself

- Born on 7th April 1967 in Liestal (Switzerland)
- Parents Trudi & Marcel with 2 older Sisters Susanne & Regula
- 1973 - '93: Discover my love for swimming
- 1988 - 93: Human Movement Studies & Bachelor of Physical Education Degree at the Swiss Federal Institute of Technology
- 1993 - 1996: Head Coach Swimming Club Uster.
- 1996 - 97: Fulfill my Dream to travel around the World by myself
- February 1997: Met Scott Volkers in Brisbane at the Valley Pool and worked voluntarily with him for 4 months.
- October 1997: QAS Assistant Coach position to Scott Volker
- October 2000: Rebuild of a new high performance squad at the QAS after the Sydney Olympic Games

### My forming Years - 1

#### Great parental Influence

- You do things only one Way: The right Way!!!
- Dad: Intelligence; Mum: Emotional Intelligence!!!

#### Athlete Years

- Countryside Club to leading Club in Switzerland

- 1st Age National Gold Medal (12 year) – 1st interview: I'd like to become a swimming coach...
- 1982 & '83: B-Finals in the 200m Individual Medley at the Junior European Championships
- 1993: B-Finals in the 200m Individual Medley and A Final with the Swiss 4x 100m Medley Team at European Championships
- Swiss Records over 100m, 200m & 400m Individual Medley

You do things only one  
Way: The right Way!

### My forming Years - 2

#### Study Human Movement & Physical Education ('88 - '93)

- Careful Selection of all the subjects that could complete my coaching education: Anatomy, Sport-Physiology, Sport-Biomechanics, Sport-Psychology, Sport-Nutrition, Strength & Conditioning, Skill Acquisition & Motor Learning
- Thinking outside the square: Learning from other Sports
- Trial and Error: Being your own guinea pig...

### World Swimming Coaches Association

5101 NW 21st Ave., Suite 200  
Ft. Lauderdale, FL 33309 USA  
Phone: 1-954-563-4930 or 1-800-356-2722  
Fax: 1-954-563-9813  
[www.swimmingcoach.org/wsca](http://www.swimmingcoach.org/wsca)



# TRAIN THE WAY YOU'D LIKE TO RACE...

## 1st Coaching job: Head Coach Swim Club Uster in '93

- Manager & Mentor Philippe Walter: A visionary & passionate boss
- Commitment till 1996 Atlanta Olympic Games

## Trip around the World by myself

- visiting Swimming Nations US & AUS
- Worked voluntarily for Scott Volkens, Brisbane Valley Pool for 4 months from February 1997

## My forming Years – 3

### October 1997: Assistant Coach position at the QAS

- Scott strengthened my belief and influenced my approach to guide swimmers towards World class
- Samantha Riley & Susie O'Neil holistic coaching
- Cross-fertilisation Learning at the QAS: A State based High Performance Institute: 18 Olympic Sports, 70 Professionals (Coaches, Sport Scientist, Sport Administrators)

### October 2000: Rebuild of a new High Performance Training Squad

- Don Talbot and Scott Volkens asked me to set up the Queensland State Swimming Centre (QSSC)
- Libby Lenton & Leisel Jones

## Physiological Factors of Swimming Performance

Swimming events sanctioned by FINA, the international governing body of swimming, range between 50m (approximately 22-26secs) and 1500m (approximately 15-17mins). Open water or long-distance events may range between 1km (approximately 10-12min) to 25km (5-6hours). In terms of the metabolic requirements, it is generally acknowledged that the three systems which supply energy for skeletal muscle contraction (i.e., ATP-Phosphocreatine, anaerobic glycolysis and the aerobic system) are all simultaneously activated during exercise. The intensity and duration of exercise determines the relative contribution of each system to the resupply of the fuel adenosine triphosphate (ATP) (Maglischo 1987,

Roberts 1991, Sharp 1992, Troup 1984). In the shortest swimming event, the 50m sprint, the relative contributions for each of the systems are (approximately): ATP-PC 65%; anaerobic glycolysis 30%; and aerobic 5%. For a 200m event the contributions are: ATP-PC 10%, anaerobic glycolysis 50%; and aerobic 40%, while for a 1500m the breakdown is: ATP-PC 2-5%, anaerobic glycolysis 20%; and aerobic 75-80%. Open water or long-distance events rely almost exclusively on the aerobic energy system.

The underlying energy systems and the characteristics of swimmers and competitive events form the basis of the training program (Roberts 1991). In simple terms, the two main physiological characteristics of highly trained swimmers are power and endurance. Endurance fitness is related to the aerobic energy system and, in the context of the tests outlined in this chapter, is assessed indirectly with a graded incremental swimming test (the 7 x 200m step test – see aerobic test). Power is related to the ATP-PC energy system, and is assessed indirectly here with a maximal effort 25 m performance test (the 2 x 25m speed test – see speed test). The

power and capacity of the anaerobic glycolytic energy system is assessed by the 6 x 50m speed-endurance test, as described (see speed-endurance test).

While indirect assessment of the underlying physiological capacities is important, swimming is a technically demanding sport, and it is prudent to also assess technique or stroke mechanics. The stroke mechanics necessary for the efficient utilisation of fitness capacities is assessed in the field with a 7 x 50m incremental test (see stroke mechanics). This test allows stroke mechanics to be assessed from submaximal to maximal speeds. On the basis that the energy systems and stroke mechanics are important in all events from the 50m to 1500m, it is suggested that every swimmer undertake all four swimming tests. The relative importance of a given test will depend on the swimmer's main competitive event.

## Rumor has it: The perfect Australian Conditions

- Assistant Coach from Canada: Jason Chugh, Point Claire
- David Marsh's visit

ENERGY PATHWAY	ANAEROBIC PATHWAY		AEROBIC PATHWAY								
	ALACTIC	LACTIC									
PRIMARY ENERGY SOURCE	ATP PRODUCED WITHOUT THE PRESENCE OF O <sub>2</sub>		ATP PRODUCED IN THE PRESENCE OF O <sub>2</sub>								
FUEL	Phosphate System. ATP/CP Stored in Muscle	Lactic Acid (LA) System Glycogen → LA Byproduct	Completely Burned in the Presence of O <sub>2</sub>			Fats	Protein				
DURATION	0 Sec.	10 Sec.	40 Sec.	70 Sec.	2 Min.	6 Min.	25 Min.	1h	2h	3h	
SPORTS EVENTS	-Sprinting 100 Dash	-200-400M -500 Speed Skating -Most Gym Events -Cycling Track -50M Swimming	-100M Swimming -800 M Track -500M Canoeing -1000M Speed Skating -Floor Exercise Gymnastics -Alpine Skiing	-Middle Distance Track, Swimming, Speed Skating -1000M Canoeing -Boxing -Wrestling -Martial Arts	-Long Distance: Track, Swimming, Speed Skating, Canoeing -Cross Country Skiing -Rowing -Cycling, Road Racing						
SKILLS	Mostly Acyclic	Most Team Sports / Racquet Sports / Sailing					Acyclic and Cyclic				
										Cyclic	

# TRAIN THE WAY YOU'D LIKE TO RACE...

THE ENERGY AND RECOVERY PROCESSES AT DIFFERENT SWIMMING SPEEDS					
	FAT METABOLISM	ZONE	GLYCOGEN (CHO)	ANAEROBIC GLYCOLYTIC	
% EFFORT OF 100 PACE	< 75% SPRINTERS < 85 DISTANCE		75-90 %	90% 100%	95-100 % 120%
FIBRES USED	RED SLOW	RED SLOW	RED SLOW & FAST	RED SLOW & FAST	WHITE & RED
MEASURED HR BELOW MAX	60 TO 80 BBM	40 TO 60 BBM	30 TO 40 BBM	10 TO 20 BBM	90 TO 100 % OF 100M PACE
QUANTITY OF FUEL	MANY HOURS	1.5 TO 2 HOURS	60 TO 80 MINUTES	40 TO 60 MINUTES	15' AT PACE (100) 20' AT PACE (200)
TIME FOR RECOVERY OF FUEL	< 24 HOURS	< 24 HOURS	12 H FAST TWICH 24 H SLOW TWICH	12 H FAST TWICH 24 H SLOW TWICH	3 DAYS FOR THE WHITE FAST TWICH
TYPICAL TIME OF UNITS IN SETS	UP TO 1 HOUR CONTINUOUS	UP TO 1 HOUR CONTINUOUS	30 SECS TO 15 MINS	30 SECS TO 4 MINS	10 SECS TO 40 SECS

## My Belief in the Development of a new High Performance Centre, October 2000:

- All you need to start: A Pool – one Coach – Swimmers
- Took every support off athletes
- Earn your right...

## Athletes have to learn about their own Responsibility and Effort Level Some Random Thoughts about Speed

- Passion for Speed & Power
- Speed through Skill
- Attention to Detail
- Importance of Consistency: How good is your worst Repetition?
- 3 R's: Rhythm, Range & Relaxation (G. Touretski)
- High Level of Concentration & less Space for Error
- Constant Flow of Energy & Body Parts Momentum
- Specific Training & Race Modelling for Sprint Events
- Learning From TES & moderate Pace for Sprint Races
- Training for Distance specific (100m, 200m) TES, FES & BES
- What is BES Training without FES Stimulation
- Difference between the Genders

## Basic Requirements to train Speed

- What is speed? (ability to swim fast vs. training for 50m only)
- Different speed zones (TES/FES/BES: distance & volume)
- Energy system readiness (weekly planning)
- Training speed into athlete vs. Training speed out of athlete
- Relationships between 50m, 100m & 200m Best Times (Formula)
- Training of speed throughout the entire season
- High skill level at fast execution of precise movements
- Bio feedback (timing/standards)
- Neuro-muscular fatigue
- Will power (chasing the dream)
- Level of concentration

## Set high standards and keep on raising the bar.

### Training for Speed

Create learning opportunities for speed on the following principles:

- Dry land training to target athletic swimmers (abilities & body shaping)
- Speed kicking & pulling
- Speed & sprint drills
- Speed training with gear
- Readiness for speed at any time

### Three basic Abilities

Create learning opportunities for speed on the interaction of three basic abilities:

- The ability to maximise propulsion
- The ability to minimise resistance
- The ability to maximise propulsion and minimise resistance in a physiologically economical way

### Essential Race Speed Thoughts

- Set high standards and keep on raising the bar
- TES = Top End Speed
- FES = Front End Speed
- BES = Back End Speed
- To develop TES it needs the following elements: Great technical skills, high Level of Concentration, immense Desire
- FES development requires a good Level of Freshness (early week)
- BES Training demands prior Stress and Fatigue (HR, Lactate)
- What is the Relevance of 100m or 200m specific Race Speed: TES, FES[100], BES[100], FES[200], RP[200]
- Ensure correct techniques are used throughout all energy systems
- Ongoing adjustments of the technique to the next Speed Zone
- Is there a Difference in Sprint Training between genders or young & mature athletes

### About Race Speed 1

- Elements of Race Speed Training & your weekly cycles: Start, Turn, Finish, Relay Change Over, Stroke Rates
- Intensity of Speed Sessions: Physiology & Psychology
- Recovering from Race Speed
- Swimming Techniques

# TRAIN THE WAY YOU'D LIKE TO RACE...

- What Type of 'Animal' is your swimmer (drop-dead Sprinter – 200m Swimmer)
- Swimmer-Coach Relationships

## About Race Speed 2

- Teach your swimmers Top End Speed
- Learn from your Swimmer's Racing History: Data Collection of: Time, Splits, Stroke Rate, Stroke Count
- Designing a Pathway for the Future (own Race Model and World Class Performers' Models)
- Planning for Speed (train Speed into your Athletes, not out of them!!!)
- Adaptation to Speed Training (Neuro-muscular Adaptation or Fatigue of the nervous System)
- Training Volume of Race Speed: TES, FES[100], BES[100], FES[200], RP[200]

## Your Timing for real Race Speed 1

- Determining projected Target Times
- Calculating Target Times
- Dives: Base Times from GUN to HEAD at the specified distance mark
- Push Offs: Base Times from Feet off Wall to HEAD at the specified distance mark
- Always use other Race Analysis Information (Stroke Rates, Stroke Counts, breathing Habits) to further improve the Specificity of Race Speed Training
- Set Target Times for Sprint Training based on the Target Race Time. Actual Race Speed should be achievable in Training, untapered

## Your Timing for real Race Speed 2

- Timing Method Adjustments:
- 2nd Lap Push Targets: based on Time from Feet-off the Wall to Head at the specified distance (except for the 50m push target: feet-off to hand-touch)
- Calculate based on the Hands-on to Feet-off Time of Butterfly & Breaststroke Turn: - 1.2s
- Calculate based on the Hands-on to Feet-off Time of Freestyle & Backstroke Turn: - 0.4s ■

Race Pace Development				
8 x	200 m	Freestyle @ A2	3:30	
	50 m	Main stroke @ BES (100)	1:30	2000 m
8 x	200 m	Freestyle @ A2	3:30	
	50 m	Main stroke @ BES (100)	1:30	
	50 m	Main stroke @ PB + 10" with low SC	1:00	2400 m
4 x	200 m	Main stroke @ AT	3:30	
	50 m	Main stroke @ BES (100)	1:30	
	50 m	Main stroke @ PB + 10" with low SC	1:00	
	200 m	Freestyle @ A2	3:30	
	50 m	Main stroke @ BES (100)	1:30	
4 x	50 m	Main stroke @ PB + 10" with low SC	1:00	2400 m
	200 m	Main stroke @ AT	3:30	
	50 m	Main stroke @ BES (100)	1:30	
4 x	50 m	Main stroke @ PB + 10" with low SC	1:00	
	200 m	Freestyle @ A2	3:30	
	50 m	Main stroke @ BES (100)	1:30	
	50 m	Main stroke @ PB + 10" with low SC	1:00	
	2 x	15 m	Turn Sprint with Key Word rehearsal	1:00

## 5 Brand New ASCTA DVDs

### Butterfly:

- Coach Ken Wood & Jessica Schipper

### Backstroke:

- Coach Greg Salter & Sophie Edington & Tay Zimmer

### Breaststroke:

- Coach Vince Raleigh & Brenton Rickard

### Freestyle:

- Coach Stephan Widmer & Libby Lenton & Melanie Schlanger

### Individual Medley:

- Coach Michael Bohl & Stephanie Rice

# World Clinic Yearbook San Diego, CA <sup>Volume 39</sup> 2007

## The Solution for keeping up with your profession.

Brought to you in CD or book form. Print out what you want, and copy them for your staff, or have the traditional paper copy. Get the information that makes a difference. Store it conveniently. Use it for yourself, or for staff education.

The 2007 World Clinic Yearbook contains transcripts of over 30 presentations including talks given by Jay Benner, Mike Bottom, Chris Davis, Dave Durden, Vern Gambetta, Bob Gillett, Steve Haufler, Dennis Hill, David Marsh, Glenn Mills, Pat O'Neill, Mark Onstott, Rick Powers, Richard Quick, David Salo, Bill Shalz, Jon Urbancek, Phil Whitten, and many others. Approximately 300 pages.

**US Addresses (includes shipping)**

- \$30 for printed binder
- \$30 for CD including PDF file
- \$45 for both the printed binder and CD

**For all INTERNATIONAL orders,  
please provide your email address so  
that we may contact you with the cost  
for shipping and your approval.**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Province \_\_\_\_\_ Country \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Email \_\_\_\_\_

Include check made out to ASCA or give credit card number below.  
VISA, MC, AmEx Only:

Card number \_\_\_\_\_ Exp \_\_\_\_\_

Signature \_\_\_\_\_

**Expected Publication Date: February 2008**



Mail to: American Swimming Coaches Association  
5101 NW 21st Ave., Suite 200, Ft. Lauderdale, FL 33309  
1-800-356-2722 fax: 954-563-9813 [www.swimmingcoach.org](http://www.swimmingcoach.org)

# Steroid Abuse in Athletes

## A Very Bad Choice

By Edward H. Nessel, R.Ph, MS, MPH, PharmD.

An athlete, by description, is one who chooses and is able to be trained in acts of strength and agility. An athlete is also one who usually shows proficiency in a sports environment and often in more than one physical activity. And, finally, a truly competitive athlete is one who seeks various ways to help carry his physical potential as far as it will take him to meet success in his chosen effort. It is this last correlative that has become worrisome in the last two decades or so. Seeking ways to increase physical potential is a very serious business. With good guidance and correct and sufficient research, most choices for supplemental energy consumption are safe, effective, and appropriate; but there are a few that are as bad as they are seducing.

I would like to capture the thoughts from the title of an old "spaghetti-Western" (made in Italy) from the 60's starring Clint Eastwood: *The Good, the Bad, and the Ugly*, to describe the effects of a class of very potent biologic chemicals and their actions on many of the basic processes of the human condition. These chemicals are steroids, and they deeply affect the most basic processes of the body's internal environment. Mother Nature has provided for this both in appropriate amounts and times throughout the circadian cycle (daily rhythm). There are different types of steroids produced and secreted by the body to help keep its functioning on an even keel in dealing with life's stresses: to control inflammation, to regulate the mineral content of our internal fluid environment, and to influence sexual characteristics and tissue building and repair. But when we fool with nature's ways, we often pay the price for our folly.

Some things in life, when first implemented, present early as perfect or nearly so. They can even astound their discoverers. Often the hard sci-

ence has to play catch-up with the discovery to paint a clearer picture as to cause and effect. Steroids are powerful hormones and produce very profound effects. Effects that, at times, can alter the very nature of the body's physiologic processes and appearance and produce astounding, even frightening results. This usually ties into the realm of the medical and/or pharmaceutical world and has offered up the concept that if a little does so much good naturally, why not play adventuresome physiologist and pep up the dose of certain steroids to produce biologic "super-men and women."

My extensive backgrounds as pharmacist, biochemist, and physiologist have prepared and grounded me over the years to help keep my biological wits. Very potent chemicals, when ingested, must be treated with the respect they command. In good conscience and practice, the three main tenets of ergogenic (a substance taken to help the body perform work) consumption must be respected and followed: (1) does the substance WORK AS DESIRED; (2) is it LEGAL TO USE under the auspices of the various sports governing bodies; and (3), most importantly, is it SAFE FOR THE ATHLETE to take, especially over time? Of the several classes of steroids found naturally in the body, only one will be discussed at length because of its inherent ability for abuse to build muscle tissue along with desired ancillary characteristics found beneficial to those athletes participating in vigorous training, competitions requiring power, and body-building. This class of steroid is labeled, depending upon slight molecular differences, either androgenic or anabolic. I will also discuss the other seducing biochemical that has reared its ugly head in sports in recent years: natural growth hormone, and explain a major physiologic difference between the two.

### **Androgenic and Anabolic Steroids**

When extracted and isolated from its natural state in the body and tested for its specific activity, the prime male characteristic hormone, testosterone, shows its signature overt effects for masculine maturity: deepening of voice, all-over increase in body hair, thickening of skin and bones, and maturation of genital organs. This is the androgenic response. The relatively rapid effect of thickening the body with lean skeletal muscle tissue comes about from what is biochemically called a positive nitrogen balance. This, in turn, produces the tissue-building response called anabolism. Because the building blocks of protein (amino acids), and protein itself, have the element nitrogen attached, the more protein brought to the body, the more nitrogen comes along for the ride. A positive nitrogen balance therefore is synonymous with tissue-building. On balance, the body can also experience protein breakdown in its daily functioning when enduring vigorous exercise on a regular basis. If insufficient protein replenishment ensues, tissue-breakdown (catabolism) results. This condition is also seen with wasting diseases like AIDS, the metastases of cancer, the atrophy of multiple systems in the poorly nourished elderly, and with frank starvation. If allowed to proceed without appropriate daily protein replenishment, this negative nitrogen balance would produce severe tissue wasting to the point of death. Combating wasting disease is the "good" of anabolic steroid ingestion.

But science and human curiosity being what they are, organic chemists began manipulating the basic testosterone molecule to magnify and specify its biochemical actions. Just a few sleights of hand, and we had products that exhibited as much as 1000 times the muscle-building (anabolic)

potential of the original natural parent hormone yet with less androgenic (masculinizing) effects. How quickly and how emphatically a positive nitrogen balance could be developed became more a matter of the chemists' skills in the lab with an agenda to produce chemical "super-beings" than a philosophical reckoning as to where all this would lead. Lean-body tissue-building (mostly muscle) amazed researchers and seduced them into thinking that many dysfunctions of the human process could be corrected quickly and dramatically and with little or no untoward effects. Those engrossed in athletics felt first-hand the steroid's ability to accelerate power output, enhance the ability to recover more quickly from strenuous training, and produce both an extended emotional state of euphoria and an exaggerated aggressiveness to beat the competition. But life was found to be not so kind nor so simple. Add to this a mix of ignorant, gullible youth and highly competitive adults with self-serving agendas, and we move through the "bad" with the Eastern-European bloc drug-doping scandals of their female swimmers of the 1970's into the Chinese duplication of abuse of the 1980's and early 1990's to arrive at the present-day environment surrounding professional and highly desirable amateur athletes and others who choose to gamble on their long-term health to deal with pressures to excel beyond their potential by consuming potent androgenic steroidal medications.

## **The Dosing and Extent of Illegal Steroid Abuse**

It has only taken about two decades for steroid abuse to grow into the national scandal it is today. The problem is such that the federal government had one of its agencies, the National Institute on Drug Abuse, develop a web site that deals in great depth trying to dispense impartial, hard-nosed facts on the dangers of this practice.

The full extent of abuse is understandably unknown. Few want to admit illegal usage in competition, and none want to suffer the consequences of illicit possession. But experts in

epidemiology estimate upwards of three million current or former abusers in the U.S. alone. With high-schoolers alone, next to creatine (the most highly abused supplement) anabolic steroids place a strong second and are strongly associated with various sports. It is also known that much more than the admitted 15% of high school boys have taken "roids," but as mentioned, dealing with probable reprisals for this troublesome behavior has kept the experts guessing.

The majority of abuse comes from participants in football (almost 30%), track and field events (21%), wrestling (15%), weight training and power lifting (10%-15%).

Abusers have developed numerous dosage schemes to minimize adverse effects, avoid detection, enhance efficacy, and prevent the development of tolerance. Stacking refers to the practice of taking more than one steroid concurrently hoping that 1 + 1 will equal 3. In cycling, abusers set a standard period of time for their cycle, such as anywhere from six to 16 weeks. They can sometimes take high doses for one cycle, moderate down for a cycle, then stop for a cycle. Repeating of this periodic usage over time presumably allows the body to acclimate to the hormone's benefit but not succumb to its dangers. In the method called pyramiding (also known as "stacking the pyramid"), abusers use a cycle to try and escalate the doses and/or the number of steroids used to reach a self-set peak at mid-cycle. Then, the abuser tapers the dosage and/or the steroids until the end of the cycle. This can get quite complicated and usually requires help and the wrong kind of "guidance." When the abuser stops using the steroids altogether during the cycle, it is called a "drug holiday."

As mentioned above, the swimming world was deeply tarnished for several years as records have shown once the former Communist bloc countries had their secret files on such things brought to light. Thousands of elite female athletes from all areas of sport were dosed repeatedly with anabolic

steroids, many not knowing what they were given. The most obvious recipients of anabolics were the female field-event participants. They presented as anything but female, many with vastly more bulk than contour. The hulking Russian, Tamara Press, world record holder and Olympic gold medalist in the shot put, seemed Bunyanesque compared to her competition who, in their own right, were the best representatives of their respective countries.

The 1976 Montreal Olympics proved to be the most blatant example of illegal drug abuse during high-level world competition. Several of the USA female swim team complained repeatedly that the East Germans and other Communist-run teams had women that seemed more like men. Deep voices, inordinate musculature, square jaws, "Adam's apples" and other androgenic physical features predicated extremely powerful performances throughout the competition. While the USA men had their best swimming Olympics in history, the USA women, also with a very talented team, were only able to win one gold medal in all of the swimming competition ... the last event: the 4 x 100 free relay. And they (the USA girls) were not treated kindly by the U.S. press. The team and their coach, Jack Nelson, were unfairly blamed for "embarrassingly" leaving the USA without gold medals. This negativity hung over this team for years.

Once the cheating coaches, managers, and administrators of the Eastern Block teams were forced to resign in disgrace, all thought this insult to sportsmanship would never be of concern again. Not so. It took several years for the same type of subterfuge to rear its ugly head again. The cheaters simply went where they were welcome: Communist China. And they brought what they knew about pharmacologic cheating with them.

All of a sudden, seemingly out of nowhere, the Chinese girls were breaking world records without the appropriate build-up to fast times in international competitions. Bells, whistles, horns went off signaling the

same problem that came from Eastern Europe years before. Expected denials and angry countercharges ensued, all to again tarnish a noble sport and deprive deserving athletes of their just rewards. Enough negative publicity was generated that once again the steroid problem and its perpetrators thinned out and seemingly just blew out to sea. But man's brilliant though devious nature once again allowed a new chemically-enhanced approach to inspired performance. The use and abuse of the most powerful endogenous substance Nature provides, growth hormone, was explored and expounded. Since the young healthy growing body naturally relies so dearly on this physiologic wonder, why not intentionally utilize it in a planned training regimen in mature athletes that would allow recovery from vigorous training so much more quickly and provide inordinate amounts of energy and power to train at a higher level that athletic superiority would be almost a given. Well, that is just what happened.

## Growth Hormone

Growth hormone has now been used (and abused) in most sports requiring endurance and power since it affects muscle growth in a special way. In swimming, all efforts (and energy costs) are at least four times the requirement than for running. And the property of water is such that as the swimmer moves more quickly through it, the water holds him back by increasing its resistance by the square of the effort to move. If the swimmer doubles his speed, for example, he is expending at least four times as much energy to move through the water, which holds him back by a factor of four:  $2^2 = 4$ . To illustrate by times: Michael Johnson set the world's record in the 200 meter dash at 19.32; Alexander Popov has the swimming record for 50 meters at 21.64. Johnson has the fastest 400 meter run at 43.18 while Pieter Van Den Hoogenband covered 100 meters freestyle in 47.84.

When swim racing 100 meters or more, even the best slow down towards the end of their events because

of how the water treats them. The idea is to train to slow down less than the competition, and this utilizes the sciences of physiology, biochemistry, and biomechanics plus talent and determination. If we add growth hormone to the correct training protocol, you can imagine the results.

Physiologic flags go up when we see power swimmers actually accelerate towards the end of their races. You see, with growth hormone, we actually have more muscle fiber cells being formed ...a greater "army" of muscle tissue from which to recruit power. With steroids what muscle fibers we have are simply made bigger. This also provides more power but the endurance factor is not as pronounced as with growth hormone since there are fewer cells to help along the way. Again, the size or bulk of muscle groups will enlarge with both hormone classes, but for obviously different reasons; one because of greater density of substance (steroids), the other because of greater numbers of cells (growth hormone). The muscle group that has more muscle fibers from which to recruit will not tire as readily, and the athlete will be able to finish his event not only with more power but with enhanced endurance over those not so "anointed." Thus, if given the choice, growth hormone has the greater effect on performance.

Up till now it has been very difficult to test for growth hormone abuse. Being a naturally-found substance, amounts could be regulated up and down as major competitions approached, and any questionable amounts found would bring about the usual individual variation response. Sports administrators had to be absolutely sure of bad intentions if positive results were found. Litigation, or the threat of same, was almost a reflex response from the accused athlete to almost every drug-testing scenario.

But now there is a means to observe "footprints" or "markers" in the blood and urine. If growth hormone is found naturally produced by the body (endogenously), it shows as remnants with scalloped edges or irregularities

under examination. If abuse has taken place and outside sources consumed (exogenously), the edges of the remnants are perfectly smooth with no irregularities. Of course, the hormone could have been utilized illegally for several months during intense training and stopped well in advance of competition. But that is why the governing bodies have instituted un-announced body-fluid testing to which all competing athletes must agree.

The human condition being what it is, it is almost a sure bet that drugs that will mask growth hormone's presence, or some other protocol that will be geared to enhance the possibility of cheating will be sought and tried.

## Adverse Effects

Adverse effects could be and usually are profound since the abusers could be taking from 100 to 1000 times the amount of hormone or steroid normally found in the body. This is the "ugly" of this whole topic. Some produce mainly cosmetic effects though rather intense; others can cause permanent disfigurement and organ dysfunction, and some lead all the way to death even in healthy young vigorous athletes.

A. Cardiovascular effects: blood pressure has been seen to spike uncontrollably; lipoproteins (cholesterol and all its "cousins") become totally unfriendly to the internal environment with the "good" cholesterol, high-density lipoproteins (HDL's) being lowered as much as 70%, and the "bad" cholesterol, the low-density lipoproteins (LDL's) being raised as much as 100%; the actual structure of the heart can become negatively altered with the enlargement of the left ventricle and resultant poor diastolic function (the lower number of the blood pressure reading being too high); this results in not allowing the heart to rest in between beats because of the constant back-pressure being created; this abnormality can persist for years after usage is stopped and is what probably killed the former NFL great, John Matusak, 12 years after his playing

days were over while he enjoyed a budding acting career; acute myocardial infarctions (major heart attacks) are not uncommon even after short-term usage due to an exaggerated response of the left ventricle to a hypertrophic stimulus such as vigorous exercise; steroids can also increase the risk of acute vascular thrombosis (blood clot) in peripheral, coronary, and cerebral vasculature. The athlete's degree of atherosclerosis (clogging of the artery) is directly related to elevated plasma homocysteine which is induced by steroids.

- B. Hepatic (liver) effects: some anabolic steroid structures (methyl testosterone, fluoxymesterone) have greater adverse effects on liver tissue than others; at first there is a reversible deterioration of the active liver tissue, then it becomes non-reversible; what can arise is increased liver tissue to cause painful swelling, inflammatory reactions of this tissue (jaundice), blood-filled cysts, benign tumors, and cancerous growths;
- C. Reproductive effects: since reproductive tissue had its origin from birth using testosterone as a starting point, both reversible and irreversible changes in function can arise; since this system is heavily influenced by feed-back mechanisms, if supra-therapeutic doses of testosterone or its relatives are given, the body senses that it no longer needs to produce these vital sex-related hormones (testosterone, luteinizing hormone, follicle-stimulating hormone); the sex organs are deemed not necessary and lose their capacity to function properly; hypogonadism begins to develop within 24 hours post-administration which produces these far-ranging negative responses: reduced sperm count, poorly-shaped and ill-functioning sperm, testicular atrophy (wasting away) and infertility; recovery may take as long as a year or may never happen.
- D. Behavioral/psychiatric effects: often causes inappropriate ag-

gressive behavior patterns called "roid rage;" severe changes in mood such as depression, paranoia, hypomania, schizophrenia, steroid dependence, psychotic symptoms, the risk of homicide and homicide; often seen is a condition called reversed anoxia syndrome where the victim senses his body is not as well developed as it actually is; this can lead to an inappropriate and all-consuming perception that more work must be done to build muscle, called the Adonis syndrome.

- E. Miscellaneous adverse effects: with suprathapeutic doses of anabolic steroids are administered, the excess is converted to estrogens; male abusers may discover that their breasts have begun to grow resulting in a painful condition called gynecomastia. Surgery may be needed to reduce breast tissue if this doesn't resolve once abuse ends; females experience male-pattern baldness, permanent lowering of the voice, shrinking of the breasts, enlargement of sex organs, menstrual irregularities, and increased body hair; tumors can arise almost anywhere; the famous NFL all-pro defensive lineman, Lyle Alzado, knew he was dying from a steroid-induced brain tumor and made several public health commercials warning of this; any growth, whether benign or cancerous can be induced to spread much more quickly when growth hormone is abused; a benignly enlarged prostate gland can become quite troublesome in response to excess growth hormone.

### **Penalties for Steroid Possession and Trafficking**

It seems the famous have been able to dodge bullets when it comes to the long arm of the law. Some are stripped of their title and promise of wealth and stardom as the most recent Tour-de-France winner found out so unceremoniously. Some endure controversy and persevere: an elite American female sprint swimmer of the early 1990's tested positive for testosterone 1000 times greater than she claimed her birth control pills

caused. She was initially banned for life by United States Swimming; but somehow found her way back to elite competition within two years. But some actually bask in the heat of notoriety. Jose Canseco's recent book about steroid abuse running rampant in Major League Baseball brought the expected controversy, especially when he named as co-chronic abusers some of the greatest home-run hitters of all time. Everyone's icons. Those who have been prosecuted for selling and distributing to these professionals and have named names and situations are doing time and paying fines, but, again, the famous are free to roam about. And to their shame, they have never owned up to the obvious. Mark Maguire entered the league in his early 20's at 6'5", 180 pounds, and retired at 65", 240 pounds, not looking at all soft and fat. Bobby Bonds similarly "thickened up" to aid his ability to power the ball over the years to be presently positioned second only to the fabulous Henry Aaron who relied on natural gifts, hard work, and longevity. And there are plenty more now undergoing scrutiny.

For anabolic steroids, individual states may have harsher penalties than allowed by the Anabolic Steroid Control Acts of 1990 and 2004. However, both acts specify that the first offense of possession of anabolic steroids obtained illegally carries a maximum penalty of one year in prison and a minimal \$1,000 fine. If trafficking is found to be the game, the maximal penalties for a first offense are five years in prison and a \$250,000 fine; these both double for a second offense.

This seems harsh enough; you would think the negative notoriety would cause the potential offenders to pause and think of the legal consequences, not to mention the great risk to bodily health. But the perception of all this must not be as negative as we would hope because the allure of greatness still calls so many of the young and talented (and, oh, so foolish) to try anything that just might give them that edge up on everyone else. ■

# Nations with WSCA Members

(Individual members from these nations are members of WSCA)

Antigua & Barbuda, Argentina, Aruba, Australia, Bahrain, Bermuda, Canada, Cayman Islands, China, Chinese Taipei, Costa Rica, Denmark, Egypt, Finland, France, Germany, Hong Kong, India, Ireland, Italy, Jamaica, Japan, Kenya, Korea, Luxembourg, Malaysia, Mexico, Namibia, New Zealand, Nicaragua, Norway, Oman, Philippines, Portugal, Russia, South Africa, Spain, Sweden, Thailand, Trinidad & Tobago, United Arab Emirates, United Kingdom and USA.

*(as of Feb.08)*

## Upcoming WSCA Clinics

**2008 ASCA World Clinic**

Las Vegas, NV, USA

September 3-7, 2008

[www.swimmingcoach.org](http://www.swimmingcoach.org)

Register  
Now and  
Save!

More information available at [www.swimmingcoach.org/wsca](http://www.swimmingcoach.org/wsca)

# How to live a committed life

By Kamal Vinodrai Shah, Kenya

Most of us want to achieve great things in life but are we really committed to our cause and what we believe in? When one is asked what they would like to be in the next few years, a common answer that one provides to this question is, "I would like to have a great job, have my own house, own one or two cars, a caring spouse, a family, etc." All these are pre-requisites any human being would want to achieve, but the fundamental question that I would like to ask is are we really working towards attaining these goals that we have set for ourselves? It is easy to say that I want to be the CEO of a multinational company, an Olympic gold medalist, etc. There is a process involved in ensuring that you achieve what you want to in life.

Some of the key tips you can use to ensure that you start to live a committed life according to what you wish to achieve is by following a disciplined exercise regime. Some of the reasons below will help you to achieve what you are persevering to be or have a desire to attain in your personal and professional life.

**1** Get up early to exercise. If you work out early, it just gets done. After coming out of the gym, swimming pool, the running track you will feel full of energy and have clarity. Otherwise, it's so easy to come up with excuses not to work out as your day unfolds (hungry/tired/stressed out/need to go home to my family/tomorrow will be a better day to do it).

**2** By working out in the morning, you actually jump start your metabolism and start up your fat burning engine within. Additionally,

it improves your digestive system to get rid of the toxins in your body and you feel much lighter as well as have a clear mind. So your workout has an even greater impact and more leverage.

**3** By working out in the morning, you'll make better choices around your diet and life. Some of the best solutions to the challenges of life come out when we are totally relaxed or are on the treadmill, in the swimming pool, etc. As they say, "Sleep over the problem if you cannot solve it now as you will find a solution when you least expect to find it."

**4** The burst of energy that comes from an early morning workout will ensure that you are energized all day. It increases your stamina and endurance and keeps you motivated to accomplish more that you wish to achieve in life. If you have noticed that as life goes by we become stagnant in our thinking and sometimes ask ourselves are we really progressing in life? Exercising can give you an indication of where you were previously and where you are currently. Additionally it allows you to practice the art of commitment.

**5** The endorphin rush from your morning workout gives you a sense of achievement that makes you feel happy. Happiness through the day is something most people are unable to pursue. Most people run through life feeling very empty, therefore they need to start gaining meaning in life.

**6** An early morning workout burns off your stress. And it increases your perspective and problems just don't seem as big. Creativity soars and more ideas are developed and implemented. You can handle the day with far greater focus and resilience for change.

**7** The morning workout will help you to think more clearly. They say the early bird catches the worm. Waking up in the early hours of the morning not only gives you time to plan but also reflect on what you wish to achieve in life. The best businesspeople are those who are the best thinkers (and decision-makers) and ensure time for exercise and personal time.

Finally, as the saying goes, "When the going gets tough, the tough get going." ■

# THE BENEFITS OF JOINING THE WORLD SWIMMING COACHES ASSOCIATION



1. The WSCA represents YOUR interests as a coach at the highest levels of the sport, the FINA organization. (Three Board members of WSCA, including a former President, are also members of the FINA Coaches Commission.)
2. WSCA is a professional coaching credential recognizing all national coaching credentials, on a universal basis, in every swimming country around the world.
3. You get a monthly educational bulletin, the WSCA Newsletter emailed directly to you.
4. You get a DAILY swim news bulletin emailed to you, to keep you totally current on developments in swimming around the world, each day.
5. You get access to Member prices with the American, Australian and UK Coaches Association website stores.

WSCA needs your membership to build the political base of coaches. Please join today.

**USA Office**  
John Leonard, Executive Director  
Matt Hooper  
World Swimming Coaches Association  
5101 NW 21st Ave., Suite 200  
Ft. Lauderdale, FL 33309 USA  
Phone: 1-954-563-4930  
or 1-800-356-2722  
Fax: 1-954-563-9813  
Email: jleonard@swimmingcoach.org  
www.swimmingcoach.org/wsca

**President**  
Michael Ursu  
128 Nolan Street  
Whitfield, Cairns QLD 4870 Australia  
Phone: 61-7-403-681-93  
Fax: 61-7-403-623-94  
Email: michaelu@tas.qld.edu.au  
or wsca.president@sportsignition.com

**Australian Office**  
Dr. Ralph Richards  
PO Box 2175  
Moorabbin VIC 3189 Australia  
Phone: 61-3-9556-5854  
Fax: 61-3-9556-5882  
Email: ceo@astca.com

**European Office**  
Brain McGuinness  
CoachED UK House  
9 Kidderminster Road  
Bromsgrove, Worcs. B91 7JJ UK  
Phone: 44-870-428-8424  
Fax: 44-870-428-8423  
Email: gmb@bscta.com  
or brianmac@bscta.freemove.co.uk

**Investment: WSCA Membership in the USA - \$30 annually. WSCA Membership outside the USA, in the Americas, \$15.00 annually. (For Pacific nations, contact Australian office, for European nations, contact European office as listed.)**

WSCA Membership in the USA -- \$30

WSCA Membership outside the USA, in the Americas -- \$15

(For Pacific nations contact Australian office, for European nations contact European office as listed.)

Name \_\_\_\_\_

Team/Company Name \_\_\_\_\_

Address (circle: home or work) \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Day Phone \_\_\_\_\_ Fax \_\_\_\_\_

Evening Phone \_\_\_\_\_ e-mail \_\_\_\_\_

Method of Payment: (Circle) Check Mastercard/VISA/AMEX Number \_\_\_\_\_

Exp. Date \_\_\_\_\_ Signature \_\_\_\_\_



MAIL TO:

**The World Swimming Coaches Association**  
5101 NW 21st Ave., Suite 200, Fort Lauderdale, FL USA 33309  
Phone: 800-356-2722, 954-563-4930 ~ Fax: 954-563-9813  
www.swimmingcoach.org/wsca