

CMSC Newsletter
July 2010



There is no mystery surrounding the enormous success of Michael Phelps. We're two years removed from the greatest Olympic performance in history. As summer rolls upon us it's easy to think about summer sports and for us, of course swimming. The coverage of Michael Phelps's pursuit of Mark Spitz' iconic gold standard was phenomenal and brought more exposure and awareness to our sport than anyone could have envisioned. I recently watched clips again of those terrific races and the one common theme was his amazing technique and turn work.

It's easy to appreciate the accomplishments on the podium and in the record books. If you eliminate the actual swimming component, it's difficult to determine if he is truly the fastest swimmer on earth. In truth, he excels in technique and most importantly at the starts and turns. For any of us who watched him perform in Beijing, we all saw the same dominance off the walls.

Physically there is no doubt that his body profiles a distinct competitive advantage over his competition. We can't control genetics; we can't all be 6'3", with an arm span of 200cm. What we can do is implement the same focus on starts and turns and enhance our own racing performance.

In truth, all of the elite athletes in any sport excel in their respective disciplines because they understand the paramount importance of technique, discipline and use science as a resource. When you consider how far advanced we've become in sports, the one area average athletes continually overlook is science. Biomechanics isn't a new concept, and understanding how our bodies move and react is paramount in achieving maximum performance with the least amount of physical effort. It's easy to state the obvious importance of sound mechanics with starts and turns, yet do we really understand the science behind it?

When you consider all the miles we put on in the water do we focus on disciplines the way we should? How much time do we lose at the walls, with our streamline and breakouts?



Richard Quick was considered one of the sport's elite coaches. Prior to his unfortunate passing; Quick was a 3 time Olympic coach, a 12 time NCAA Champion and 5 time NCAA coach of the year. An interesting DVD that Quick and Milt Nelms collaborated on;

Championship Winning Walls: Underwater Swimming - The Fifth Competitive Stroke

In Underwater Swimming - The Fifth Competitive Stroke, Richard Quick discusses the fact that in many competitive races today, up to 60% of the race can be done underwater! Quick presents drills and skills that will equip you to take your swimmers' underwater capabilities to a new level. This video begins with Coach Nelms in the classroom, explaining with fantastic illustrations just how Posture, Line and Balance are factors in wall push-off set-ups for successful underwater swimming by learning to utilize what he calls the "Power Triangle." In the pool, Quick shares Posture, Line and Balance skill development of body undulation on the front, side, and back positions. He continues with incorporating these skills into drills that are designed to teach swimmers how to successfully use body undulation in their push-offs through full stroke breakouts for fly, back and free.

How do we relate physical preparation and performance?

Sports Biomechanics is the application of physics and mechanics to the human body during sport. In such a technical sport such as swimming, it plays a very important part. Humans aren't the best swimmers; we can swim at 5 mph compared to a sailfish which can move through the water at 65 mph.

Through the water

Water is 773 as dense as air and 55 times as viscous. From the start, the body position on the block must be maximized to achieve the most efficient push off and get the body in position to enter the water, to make the 'hole ' to follow in through. Biomechanics also helps to understand the best body position to reduce drag following the dive, to maximize the speed that is achieved off the blocks. After the push off the wall, body position is also important to have a streamlined glide away from the wall and reduce drag.



EARLY MORNING SWIMMING RETURNS TO TALISMAN IN AUGUST

Starting Wednesday, early morning workouts resume 6-7am at Talisman.





It seems to me that the buzz surrounding cross training has since past my era. There is no question that many athletes aim at providing balance to their workout regimes. As times evolve we are continually finding new ways to incorporate cross training. I've never understood yoga and the benefits to the body but more and more people are raving about the results. I was surprised to find an article related to swimming.

YOGA FOR SWIMMERS

Yoga, with its emphasis on balance and alignment, is great dryland training for swimmers.

By Baron Baptiste and Kathleen Finn Mendola

Gentle on the joints, forgiving of injuries and other physical limitations, and deeply relaxing, swimming and yoga, when practiced together, unite their strengths, making for a more balanced athlete.

The minimal gravity effect of swimming is appealing to those who suffer from injury that precludes them from high-impact movement, as well as pregnant women, people with chronic joint pain, and the elderly. Logging laps in the pool undoubtedly provides physical and psychological benefits. But too much time spent in the water without counteracting or opposing activities can be detrimental, resulting in body misalignment and lack of bone strength.

Body alignment, integral to all sports performance, is often thrown off kilter in swimmers, says Leslie Sims, a former national swim coach who is currently a yoga teacher at "now YOGA" and head coach at Club Swim in Los Altos and Palo Alto, California. This is due to overdevelopment of the front of the body, which occurs from chronic overuse in three of the four basic swim strokes—butterfly, breast, and freestyle. Because a swimmer's pectorals are predominantly in a contracted state, the opposing fascia (where muscle attaches to bone) of the rhomboids is weakened. Because the backstroke can counteract some of the repetitive stroke motions that lead to such muscle imbalance, Sims instructs her swim students to perform the backstroke at the end of every workout. Often just doing the backstroke isn't enough, however. Learning proper alignment through a consistent yoga practice can help tremendously, Sims says.

The biggest drawback to a fitness routine based solely on water sports is that the body can't get stronger without gravity. Just as a coiled spring gets its force from resistance, the body needs stress to build strength in muscle and bone. Bone density, in particular, is developed through low- and high-impact weight-bearing exercise like running, walking, bicycling, dance, and yoga. This is an especially unfortunate drawback for women, who are most at risk for developing osteoporosis, a disease marked by a gradual weakening and thinning of the bones.

Laps and Asanas

Competitive swimmers call it "dryland training"—incorporating other sports into an exercise regimen to compensate for what is missing in a primary workout. A yoga practice can complement even an amateur's swim routine by introducing two legs of the fitness triad—strength building and flexibility. Asanas (postures) utilize body weight as a powerful source of resistance: Outside of the water, gravity helps to build strength and muscle. In addition,

postures take the body through a full range of motion, encouraging flexible, supple muscles that are less prone to injury.

Consistent practice of yoga also yields extended muscles, as opposed to the contracted, compact muscles associated with running or cycling. And extended muscles are physiologically necessary for a swimmer: To be efficient in the water, every stroke and kick demands a full extension of the arm and leg. When executing all four strokes, swimmers propel themselves by extending and contracting from the tips of their fingers to the ends of their toes.

Many competitive swimmers run to increase aerobic conditioning—the third leg of the fitness triad—because effective aerobic training requires more than just a few laps in the pool. "If you just casually swim laps, chances are you'll be unable to bring your heart rate up high enough and sustain it long enough to gain significant aerobic conditioning," says Sims. "By incorporating the four basic strokes when you swim—breast, freestyle, butterfly, and backstroke—you *can* get a full body workout. However, achieving a cardiovascular workout in the pool is more challenging. You must use interval training—swimming laps at a vigorous pace against a clock."

In Sims' work with swimmers, she focuses on key body areas and applies some of what she calls "universal principles" of asanas to help them ward off injury and improve performance:

Shoulder Blades: In Adho Mukha Svanasana (Downward-Facing Dog) and Urdhva Mukha Svanasana (Upward-Facing Dog), your instructor may tell you that the shoulder blades need to drop down the back. The same principle applies in swimming, where the shoulders create the biggest problems. Rotator cuff injuries or shoulder tendonitis (also called "swimmer's shoulder") occur when the rhomboids are not held in place when the arm is raised in freestyle stroke. Instead of the muscle carrying the weight of the arm, the tendon bears the burden. Over time the tendon becomes frayed and aggravated.

Hips: Baddha Konasana (Bound Angle Pose), with the soles of the feet touching together and the outsides of the knees flat on the floor, demonstrates a healthy external rotation of the hip. For many people, though, the hips remain locked and stiff. In a swimmer, this congestion can manifest in a faulty breaststroke kick. Without free, loose hips, it's difficult to complete this stroke effectively and efficiently.

Ankles: In all of yoga's standing poses, it's important to place the foot on the ground in order to get full extension, and flexible ankles allow the foot to rest solidly on the ground. Similarly, swimmers use the ankles as the foundation of movement—propelling the body forward with a kick. The top of the foot should hit the water as if in Virasana (Hero Pose)—at 180 degrees. Sims will often work with runners who have such severe ankle stiffness that their kick literally pulls them backwards—"like trying to lift a plane off the ground with the flaps down."

Swimming to Samadhi

Both yogis and swimmers know about using the breath to move the body. Yogis use the breath to encourage the opening and lengthening of stubborn muscle groups, and the cleansing of physical and emotional toxins. Deep, full breathing enhances yoga asanas and increases circulation and cardiovascular capacity. Being immersed in the water makes this process easier, as water puts pressure on the lungs to expel excess air and allows fresh new prana to enter the body.

"All breathing in swimming should be done in an open chest position," says Sims. Just as yogis often exert effort on the inhalation and relax on the exhalation in asana practice, swimmers inhale before submerging, and then utilize the extended exhalation to follow through on each stroke, propelling themselves through the water. The stroke facilitates the cycle of breath, with the rhythm modified according to each individual. In freestyle, swimmers are encouraged to become aware of alignment and pattern their breath cycles so that the head turns to breathe on alternating sides of the body. Not practicing this "bilateral breathing," Sims says, would be like doing Trikonasana (Triangle Pose) on only one side of the body.

It makes sense that breath awareness factors into good swimming. After all, swimming is a sport in which the senses are withdrawn and awareness is pulled inward. For some people, Sims adds, because "you are covered with water, with little sensory ability, little sound, little visual stimulation...it's a sense of the fifth limb of yoga—*pratyahara*," literally, a gathering toward oneself.

Baron Baptiste is a yoga teacher and athletic trainer in Cambridge, Massachusetts, known for his work with the Philadelphia Eagles and as the host of ESPN's "Cyberfit." Kathleen Finn Mendola is a health and wellness writer based in Portland, Oregon.



NUTRITION

It goes without saying that any related articles we put out about nutrition in our newsletter are designed to present concepts and ideas. There are thousands of articles out there on the merits of dieting, nutrition et al. It is important you recognize that any piece is not intended to promote or prescribe a following. All of you should ensure that you properly research and formulate your own nutrition plans. Talk to a nutritionist or your doctor about what works for you.



Is There a Food Better Than Fruit?"

by Frederic Patenaude

Fruits are such a delight to the senses. Of all the foods available to us, fruits are the most attractive, delicious and enjoyable. Of all natural foods, that is, the foods we can eat in their natural state, fruit is the food we are most attracted to and that first entices our senses. Humans are born with a natural instinct for sweet foods and in nature that instinct naturally draws us to fruit.

When we are hungry - and I mean really hungry - fruit is often the most satisfying food we can eat. Is there anything better than to devour a delicious ripe mango on a hot summer day? Or to bite into a luscious, freshly-picked apple? Or to enjoy a sweet, juicy ripe orange? Is there any man-made dish that can beat the perfection of a fully ripe cherry?

Fruits have been consumed by human beings going as far back in time as we know, whereas

grains, legumes and dairy products have only been cultivated for 10,000 years or less, which is just a breath in the life of humanity. Anthropological studies have shown that fruit has been an important part of the human diet for hundreds of thousands of years.

Fruit has always been recognized as one of the healthiest foods there is. In the minds of most people, fruit is seen as a healthy food we should eat more of due to its vitamin content. But even when realizing the exceptional nutritional qualities of fruit, very few people actually give it the place it deserves in the diet. Fruit is still eaten as a “snack” or a “dessert,” but is rarely seen as a staple food. In the mind of the masses, fruit is a “healthy snack” but not something that can really sustain a hard-working man, like meat or bread. They don’t realize that fruit should be a staple in the diet, and has been for thousands upon thousands of years, long before bread and rice were cultivated, and long before cheese, sandwiches and twinkies were invented.

Fruit eating offers many benefits:

- * Fruit is the best source of the natural sugar needed for energy.
- * Fruit is packed with vitamins, and still represents the best source of vitamins in any food.
- * Fruit is packed with anti-oxidants.
- * Fruit is easier to digest than grains. Fruit is basically pre-digested. Digesting ripe fruit hardly requires any digestive enzymes, and is thus less taxing to the body.
- * Fruit is alkaline forming (whereas meat, fish, grains and legumes are acid-forming).
- * Fruit contains an abundance of pure water.
- * Fruit is easy to eat. It doesn’t require much preparation.
- * Fruit is beautiful. All of our senses are nourished by fruit, not just our taste buds.
- * People who eat lots of fruit live longer. A study published in the *British Medical Journal* (September 2001), showed that fresh fruit offers the best bet for a long life. The results of a study showed that frequent fruit eaters had a 32 percent lower risk of dying from cerebrovascular disease such as stroke, and a 24 percent lower risk of dying from ischemic heart disease, than those who ate fruit less than once a day.
- * Fruit contains lots of fiber, which is necessary for optimum digestion.

Eating fruit before meals and other food combining rules

Natural Hygienists have known for a long time that fruit doesn’t combine well with other foods. The reason is that fruit contains simple sugars that require no digestion. Thus, they will not stay for a long time in the stomach. Other foods, such as foods rich in fat, protein and starch, will stay in the stomach for a longer period of time because they require more digestion. So if you eat fruit after a meal, the fruit sugar will stay for too long in the stomach and ferment. This is why people experience digestive trouble when eating fruit that way. They then blame that particular fruit for their trouble and claim that they are “allergic” to it.

Natural Hygienists have been recommending for a long time that fruit be eaten alone with no other foods. They have also recommended eating melons alone and avoiding mixing acid fruits with sweet fruits such as bananas. These are great recommendations, but can be definitely be simplified.

Many people have a difficult time eating a meal of fruit alone. They'll eat a meal of melon and not so long after they'll be hungry again, for the simple and obvious reason that melons are not calorie dense. Eating a small cantaloupe (200 calories) is not going to sustain you for very long. But because they have read somewhere that mixing melons with other fruits is not allowed, they'll try to wait until the next meal to eat something else and then will often in the meantime overeat on dried fruits and nuts to compensate.

The solution to this is very simple: since fruit digests so fast, it is possible to eat fruit before any other food. You can, when you are hungry, eat as much fruit as you care for. One type of fruit only would be ideal. Then wait a little bit, like 5-10 minutes, and have any other food you desire. This can be a salad, a little avocado with tomatoes, some nuts, or anything. It can be cooked food too. If you've been trying to follow food-combining rules without success, this new information could be very valuable to you.

The same goes with mixing other fruits together. You can eat all the melon you want, and then, if you are still hungry, eat another type of fruit to satisfy your appetite. It is not necessary to eat melons alone if they are eaten before other foods. You can even have melon and then have an avocado after. The only thing that is important to remember is to have the fruit first - not after, and ideally only have one variety at a time.

Fruit & Physical Exercise

Fruit is the ideal food for exercise. The best post workout snack or meal is not muffins, yogurt, or protein shakes, but fresh fruit. Runners and other athletes have long known that there is nothing better than high-water content, sweet fruit, such as oranges or melons, after a workout. They contain enough water to hydrate the body and their natural sugars are quickly utilized for energy production.

Regular physical activity improves insulin sensitivity, which is the effectiveness of insulin in transporting sugar to your cells. In other words, if you exercise, you'll be able to utilize fruit sugar a lot better and will be less likely to experience 'sugar swings' and blood sugar fluctuations.

With the knowledge that the primary source of fuel for the human body is natural sugar, the concept of fruit having "too much" sugar becomes illogical. The only way you can consume too

much sugar in the form of fruit would be to overeat, which is difficult to achieve when eating high-water content fruit.