

## PHYSICAL FITNESS

# Physician Heal Thyself: Lead by Example—My Personal Tale of Physical Fitness

Uday M Jadhav

## ABSTRACT

Exercise is the most effective antiaging pill ever discovered. This is a small commentary on my way of lifestyle modification for a better quality and peaceful existence.

To exercise for a physician who preaches lifestyle modifications is sacrificing professional work and the capital gains. Swimming has some element of aerobic and anaerobic metabolism; as the swim distance increases, so does the contribution of aerobic metabolism. Anaerobic work is best done at the fastest possible speeds. Anaerobic threshold along with aerobic threshold and  $VO_{2max}$  constitutes the exercise physiology that make up the aerobic profile.

*Shavasana* which is an integral part of yoga sets in calmness of the mind and release of thoughts turning inward away from the more mundane things in life. The physiological benefits of deep relaxation are numerous, including those on control of heart rate and blood pressure. The practice of yoga and meditation recently had an endorsement from the American Heart Association in the first ever released guideline on meditation.

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## THE EXERCISE MANTRA

Exercise is the most effective antiaging pill ever discovered.

Exercise to me is a primitive pleasure. I exercise for the complete sense of fulfillment. Nothing to prove to myself or anyone, nothing to lecture or write about. No role model stuff, just a passion. Like the old red wine, it gets better with the age.

I learnt swimming 25 years back and have never looked back and to the best of my ability never skipped a day. I weighed 76 kg, and wore 34-inch waist trousers. One year down the line, I lost 12 kg and weighed 64 kg; body mass index was 22.9, which has remained unchanged for 24 years. Never lost or gained an inch for

24 years. The pictures over the last three decades have remained reasonably unchanged as you may notice in Figures 1 to 4. It is a pain at times to search for my 32-inch Dockers trouser in the US malls, but so be it. I have been very fortunate to have the Mumbai Young Men's Christian Association (YMCA) branch with pool and gymnasium 5 minutes from my residence. The consequence is sacrificing professional work and the capital gains. It was tough in my younger days of practice—a related struggle to accept this loss. I am happy that at least in one aspect of life my conviction remained firm. For the last 5 years, I do the stretches and permissible weights at the gymnasium. The whole active exercise phase is 90 minutes. As we age, it becomes absolutely relevant to keep up the muscle tone.

There are as many alternatives to swimming—jog, treadmill, rope skip, badminton, or simple walk.

“Everyone should take their dog for a walk every day, even if they do not have one”—Prof Pers Astrand.

## EXERCISE PHYSIOLOGY OF SWIMMING

Anaerobic and aerobic metabolism are both achieved in swimming. Swimming has some element of each; as the swim distance increases, so does the contribution of aerobic metabolism. Anaerobic work is best done at the fastest possible speeds.

When lifting weights, you have a pretty good idea how the work should be done. There need to be certain number of repeats with a certain amount of weight

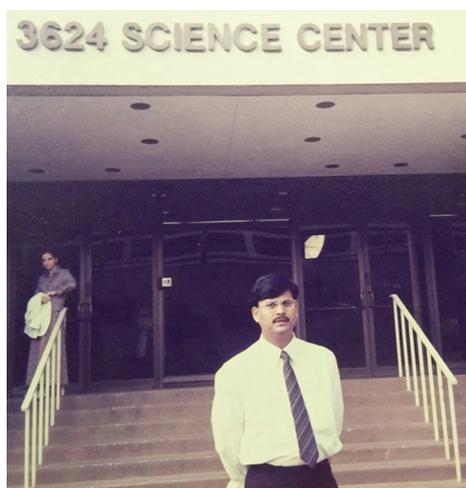


**Fig. 1:** 1980s: Award for nifedipine efficacy in hypertension thesis

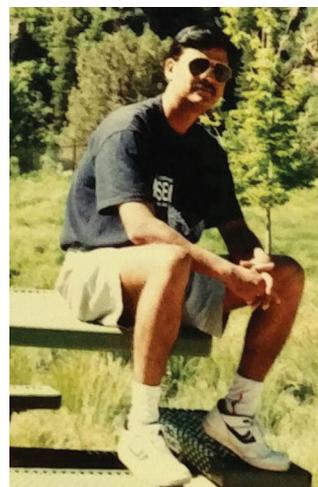
Cardiologist

Department of Cardiology, MGM New Bombay Hospital, Navi Mumbai, Maharashtra, India

**Corresponding Author:** Uday M Jadhav, Cardiologist  
Department of Cardiology, MGM New Bombay Hospital, Navi Mumbai, Maharashtra, India, e-mail: umjadhav@gmail.com



**Fig. 2:** 1990s: USMLE clinical skill test, market street, philadelphia, USA



**Fig. 3:** 2000: Weekend break doppler training, Colorado, USA



**Fig. 4:** 2017: After 25 years

repeated in several sets. It may be based on a percent of the maximum you can lift or on a history of what you lifted previously. In the swimming pool, it is a different ball game, as it is difficult to judge and have mathematics on how the desired training endurance can be achieved or for that matter, the maximum predicted heart rate.

Anaerobic threshold, in swimming, is the fastest pace a swimmer can hold over a minimum of 30 minutes (no breaks), while still being able to process/tolerate the build-up of lactic acid. Anaerobic threshold along with aerobic threshold and  $VO_{2max}$  constitute the exercise physiology that make up the aerobic profile. Anaerobic threshold is the point where the body starts to produce lactic acid faster than it can be removed, resulting in an accumulation of lactate and fatigue. Events of 10 to 30 minutes duration are often done right at or just slightly above the anaerobic threshold.

As one crosses the anaerobic threshold, activation of the more fast twitch (FT) muscle fibers starts. Fast twitch fibers produce their energy primarily through

the anaerobic energy system, resulting in the production of more lactate than the body is capable of removing. The biggest source of lactate removal is the slow twitch (ST) fibers. Long low-intensity training will improve the ability of the ST fibers; the so-called ST fiber fitness, to remove the lactate produced by the fast fibers.

#### SPEED AND ENDURANCE IN SWIMMING

- *Minimum Endurance Pace (EN1):* Almost any distance, with very low rest (less than 30 seconds) between repeats, swum at a sustainable, fairly easy pace.
- *Threshold Endurance Pace (EN2):* EN2 pace is the second of three endurance training zones also named as the "Threshold pace or 'Cruise' interval." The usual distance is less than 500 yards with up to 60 seconds rest between repeats, swum at a pace faster than EN1. This type of set takes between 20 and 45 minutes to complete, and increases the ability to perform aerobic work without causing a buildup of waste products in the muscles. It is recommended to follow a day of easy work to restore muscle glycogen stores.
- *$VO_{2max}$  Endurance Pace (EN3):* A pace faster than both EN1 and EN2 for a usual distance less than 300 yards with rest just above 20 seconds for a duration of 30 minutes or lesser. Recovery phase is required to restore muscle glycogen stores.

My swimming involves 50% EN1 and 50% EN2 with less than 10 seconds for flip over and 0% EN3 for comfort zone, but my recommendation is to do some of each over a week depending on the age and physical endurance. It is important to hold the pace for each set. With experience, one can relate the perceived exertion to actual speed and decide the pace.

What is vital is to keep the body "streamlined" to cut through the water effortlessly and keep the body supple

and not splay water around. It is all about the technique, not speed. Cruise speed to me is the yoga while swimming. The breathing is in perfect harmony with the limb movements, thoughts are inwards, and there is no distraction.

It is good to relax and take it easy in a swimming pool as an evening out just like one does in Jacuzzi, but a waste of energy to finish a lap and get into conversation at the other end of the pool during a swim workout. It defeats the very concept of exercise physiology. The Mumbai YMCA has more of an exercise culture rather than the “club” culture, so it helps. No fancy restaurant and bar, only exercise facilities.

There are days when exercise in the morning becomes cumbersome. All of us have experienced it. Muscles are stiff, limb movements laborious, and it is just not the usual day. At a younger age it is easy, later on, it is a signal for a rest day and come back on the next or still better just take easy in the pool. The usual culprits—too late in the night before, jet in and out for conferences, late night party, poor sleep quality—are unavoidable and potentially avoidable. The most vital aspect in my opinion is good hydration the night before and just prior to the exercise. I make it a point to keep up the fluid volume and consume at least 1.5 L of water during the exercise span and before. That helps in endurance and lessens muscle fatigue. Scoop of whey protein within 15 to 30 minutes of the workout additionally helps. I am a believer in a less-carbohydrate and high-protein diet, little extra portion of monounsaturated fats, and I have no surprise at the findings of the dietary recommendations of the PURE study at the ESC 2017 meeting.

## YOGA

Swimming is yoga to me. I follow it up by Shavasana in the quiet of the home. Shavasana (Shavasana or Corpse Pose) is done at the end of a yoga practice in lying flat on their backs with the heels spread wide and the arms at the sides of the body, palms facing upward, eyes closed and deep breath with the use *deergha* (long) *pranayama*. This reclination is good enough for me as a novice not yet ready for formal meditation. It sets in calmness of the mind and release of thoughts turning inward away from the more mundane things in life. The feeling of being very still with light, unconscious act of breath is

the serene feeling of when life ceases. It is a perfect state of sensory withdrawal.

The physiological benefits of deep relaxation are numerous, although may not be scientifically tested by a clinical trial protocol.

- Decrease in blood pressure
- Decrease in heart rate and rate of respiration
- Decrease in muscle tension
- Decrease in metabolic rate and the consumption of oxygen
- Decrease in general anxiety
- Improvement in concentration and memory

The American Heart Association’s first ever guideline statement on meditation published online on September 28, 2017 has added the proven and much-needed meditation and yoga adjunct to other standard therapies in reducing cardiovascular risk with “biological plausibility” for beneficial effects on the physiological basal state. Although, in a given individual, the response of blood pressure reduction may vary, it still plays a substantial role in hypertension.

## FINAL THOUGHTS

I still believe that I am at the lower berth of fitness and only have to take inspiration from friends and strangers to understand life in totality. My biggest regret is not following the entire art of yoga and meditation. Probably it is due to the thought that this is all I can do with the time available (rather than spare) before I start the professional work. Had I had the time available or taken a decent decision to slow down or call it a day, I will have the whole morning to exercise, self-contemplate, and even meditate, all at a leisurely pace. Wishful, secret thinking and when I meet people usually out of the medical profession than inside who live life in this manner, the motivation is stronger.

To this date, I have not had a wakeup call. Eventually, it will come, and I will not wake up. But then, it will not matter. Dust to dust—no regrets.

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