



# THE INTERVAL

*Central Maine Striders*



## Health Benefits of Running

### Craig Lewis

*January 2013*

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I have been collecting health benefits of exercise articles for five decades. But 2012 has been the Holy Grail.

Things had become embarrassing. In recent years the health-benefits information has become so good that no reasonable skeptical person would believe it. It is almost as if God herself must be a runner and therefore wants to reward her special friends, fellow runners. Why would Nature care so much whether or not we exercise?

But I no longer need to resort to metaphysical explanations. I now, finally, understand why Nature demands that we exercise aerobically. The explanation depends on our prehistory. In fact, it dates back 500 million years.

In this country during this era we do not experience hunger or famine. In the US even if a new Dust Bowl occurs, we will merely import our food from Brazil. Perhaps we would not be so lucky if we lived in Somalia or Mozambique. But through all of Earth's history there has been periodic boun-

ty and cornucopia of food choices at times, and blight, drought, or just bad hunting at other times. All species, and all multicellular organisms, or just humans, and not just animals, must have a strategy for dealing with an environment that is alternately generous and sparse.

Mediating out this fickle and often cruel world is an enzyme complex called TOR (Target of Rapamycin). Just as the hormones insulin and insulin-derived growth factor regulate extracellular body

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#### Editor's News—Linda Benn

I want thank Craig Lewis again for his yearly front page article, Health Benefits of Running.

I would like to thank those who have renewed their membership. You will find

a list of those on page 6.

Mt. Washington sign up is February 14 to March 14.

Has anyone responded to the front page article from last? I have a cou-

ple of suggestions. I think the race series is a good idea. Maybe we should have officers again and a banquet. I am not a leader though, but I am a follower and willing to help.



resources, TOR controls intracellular resources. Yeast TOR and human TOR are nearly identical. When genes do not mutate much over half a billion years, then those genes necessarily serve some essential function.

When the rains are good and the food gathering goes well, enzymic TOR activates. When food supplies are abundant, organisms must stock up in anticipation of the next, say, poor hunt. It is TOR that performs this service. When TOR turns on, cells multiply (expending telomere length, unfortunately), organs regenerate and grow, fat cells plump up. And it makes sense that during these good times, cell housekeeping functions are postponed.

When the DNA of cells is heavily mutated from a variety of sources, such as cosmic rays, PCBs, muon showers, or X-rays, or when cells expire their telomeres, those cells become nonfunctional. We call them "senescent cells" or zombie cells." Mutated cells present a potential existential threat because they are especially prone to malignant transformation. These damages and useless cells must be cleared away and there are simple systems available to allow them to undergo self-suicide, hari-kari, if you will, for the sake of the whole organism. But if the body is anticipating the next famine, TOR instructs these cells to delay their self-immolation. After all, in a period of hunger, these useless cells make good eating. In times of hunger it is preferable to consume senescent cells rather than functional vital organ cells. Recent human history is the only time in the history of our planet that organisms can traverse an entire lifetime and never once perform this essential housecleaning function.

When TOR is activated for long periods, senescent cells accumulate in all organs. They sit there and release inflammatory mediators. They sap the strength of muscles and make them sore. If you've ever wondered why your pitiful nonrunning friends complain bitterly during a 200 yard jog, this the explanation—their muscles are laden with senescent cells. It is as if they all fibromyalgia.

It is not just senescent cells that demand cleaning up. Mitochondria, take cell powerhouses, gradually undergo oxidative damage. Their cristae become ratty. Activated TOR blocks the disposal damaged mitochondria.

When the protein beta-amyloid misfolds in brain neurons, this protein and tau protein gum up neurons, which undergo degeneration and eventually die. Eventually, Alzheimer Disease or other neurodegenerative syndromes ensue. By the time most Americans are 25, tau and beta-amyloid are starting to accumulate. By the time most Americans are 40, sulci, the spaces between their brain folds, are starting to widen. These neurodegenerative diseases are a horrible waste. As long as TOR is switched on, the body postpones clearing away beta-amyloid and tau protein. Thus, the brains of your nonrunning friends, who don't experience this cellular cleaning, are veritable nightmare.

When starvation intervenes, TOR is switched off and these saved up resources start to be used. It is as if a vacuum cleaner has been switched on. Senescent cells, deformed proteins, and decrepit mitochondria are swept away. And when TOR is off, then cell multiplication is kept to a minimum, preserving precious telomere length, thereby improving longevity of the individual. You will recall that distance runners

have 1/3 the telomere velocity of nonrunners. Older runners have much longer telomeres than others do and this accounts in part for 16 years of greater longevity. Their relatively youthful appearance as they age, the minimization of the period of disability during extreme age, and because of preservation of the immune system, some 20-fold decrease in factious disease death rate.

Presumably, we could reap the benefits of a low TOR state by perpetual near-starvation. But this nearly impossible to do and is extremely. What good would it do to live longer if you're miserable? Have you ever seen a person with anorexia nervosa smile? And a just-released primate study showed that extremely low calorie diets did not improve longevity gain. Whether period fasting would work remains to be shown—I suspect it might. But if fasting does work, then how often and how long?

Running aerobic exercise trick the body into thinking that it is resource deficient. Running switches TOR off. But unlike starvation, running makes us feel good, not bad. And folks on extremely low calorie diets cannot run—they have no energy.

Minimizing cell division and preserving telomere length may be a good overall strategy, but this might not work in all organs. Especially in the brain it is important to maintain new neuronal growth throughout our lives. Because low TOR blocks cell division, brains must have separate mechanisms to allow cell division even if TOR is low. This why the brain releases neuronal growth mediators during aerobic exercise. There is actually an overcompensation. I am a runner: My hippocampi (responsible for short term memory) are the size of walnuts, shell on. My nonrunning friends have hippocampi the

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size of pistachio nuts, shell off. My neuronal mitotic index throughout my neocortex, but especially in my frontal lobes, is 3 times high than for my friends. Because cell division in brains is so much less than in other organs, telomere exhaustion is not an issue for brains as we age.

An enormous percentage of our population suffer with depression. Many of these folks are treated with SSRIs—serotonin reuptake inhibitors—such as Prozac. It has been believed for a long time that their mechanism of action is that they boost the concentration of serotonin in some synapses. The inconvenient truth here, however, is that naturally there is a down regulation of post-synaptic serotonin receptors. But

there is now reason to believe that SSRIs actually do their work by promoting neuronal growth, especially in the hippocampi. It has always been true that far more effective method of treating depression than medication has been daily aerobic exercise.

Until now our explanation for the necessity of exercise for the maintenance of health has been a hand waving one that addresses human history back 1.7 million years, during which time our ancestors were not just runners, but universally ultra distance runners. Now know that systems that determine our mortality and morbidity long predate humans

TOR research is in its infancy. It gives us enormously powerful tool to answer our most important health questions. Until now to answer a question like,

“Which type of exercise is most healthful”? Was impossible-- you would need to follow 20,000 people over 90 years. For purposes of health, does the intensity of exercise matter, or is long slow distance just fine? Could you obtain the full health benefit working 3 days a week? And how much is enough? Is there an optimal mileage per week? How does diet interact with exercise? If you run, does it matter what you eat? To answer these reliable TOR activity assay. There are now hundreds of articles per year on TOR worldwide. Within a few years there will be tens of thousands of research papers each. This new information will revolutionize exercise physiology and will profoundly affect all of medicine.

### Mt. Washington Reminder

**The lottery for entry into Mt. Washington opens Feb. 14 and expires Mar. 14. Drawing is on the 15th and if we want the 5 club nos. they have to be completed and entered on 3/16.**

**So if interested in running it, try the lottery. If you don't make it, get in touch with me immediately. My e-mail is uphill@uninets.net!**

### January 2013

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
X	28	29	30	31		

### February 2013

S	M	T	W	T	F	S
					1	2
X	4	5	6	7	8	X
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

**X = race on that day**

**Check your race calendar and with race director**

Central Maine  
Striders  
Financial Report  
December 2012

<b><i>BALANCE FORWARDED</i></b>		<b><u>\$1,794.04</u></b>
<b><i>REVENUE</i></b>		
DUES	5.00	
MISC	285.00	
<b><i>TOTAL REVENUE</i></b>		<b><u>\$290.00</u></b>
<b><i>EXPENSES</i></b>		
DUES/FEES/SUBSCRIPTIONS	589.00	
INTERNET	10.00	
POSTAGE	27.00	
PRINTING	21.84	
<b><i>TOTAL EXPENSE</i></b>		<b><u>\$647.84</u></b>
<b><i>NEW BALANCE</i></b>		<b><u>\$1,436.20</u></b>

Central Maine  
Striders  
Yearly Financial  
Report 2012

<b><i>BALANCE FORWARDED</i></b>		<b><u>\$2,029.00</u></b>
<b><i>REVENUE</i></b>		
CLOTHING	5.00	
DUES	1185.00	
MISC	50.00	
RACE FEES	689.00	
<b><i>TOTAL REVENUE</i></b>		<b><u>\$1,929.00</u></b>
<b><i>EXPENSES</i></b>		
ADVERTISING	14.27	
AWARDS	20.00	
DONATIONS/RENTALS	489.00	
DUES/FEES/SUBSCRIPTIONS	1197.97	
INTERNET	120.00	
POSTAGE	314.40	
PRINTING	303.47	
RACE SUPPLIES	62.69	
<b><i>TOTAL EXPENSE</i></b>		<b><u>\$2,521.80</u></b>
<b><i>NEW BALANCE</i></b>		<b><u>\$1,436.20</u></b>

# Membership Information – Form

## TIME TO RENEW

Please fill out the following information for our records and return as soon as possible, thank you. Only need to fill out if anything has changed, such as your address.

**Return to:** Central Maine Striders, P.O. Box 1177, Waterville, ME 04903

**Dues:** \$15.00 per family which includes one Interval per household (12 issues).

List each runner of your household below:

Runner's Name: \_\_\_\_\_ Gender \_\_\_\_ DOB: \_\_\_\_\_  
 Name: \_\_\_\_\_ Gender \_\_\_\_ DOB: \_\_\_\_\_  
 Mailing Address: \_\_\_\_\_ Home Phone: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_ Zip: \_\_\_\_\_  
 Email Address: \_\_\_\_\_ Volunteer: Yes: \_\_ No: \_\_  
 Send by email: Yes: \_\_\_\_ No: \_\_\_\_

The January, February and March issues will list all of the Striders who have paid their dues for 2013. If you became a member after October 31 then your membership is good until December 2013.

## TIME TO RENEW!!!

Anyone **living in your household** is considered a member of the  
Central Maine Striders.

So be sure to list everyone who is a runner on your renewal form.

Thank you.

**CONGRATULATIONS TO THE FOLLOWING STRIDERS  
ON THEIR RACE PERFORMANCES**

**Epic 5k-12/31/2012**

Phil Pierce 28:28

**Presidential 5k-11/24/2012**

David Colby Young 29:50

**2013 Central Maine Striders**

**as of 1/14/2013**

Helen Amazeen	Cliff Fletcher	Dan McManus
Bob Bachorik	Patrick Guerette	David McManus
Peter Bastow	RJ Harper	Sam Mitchell
Guy Berthiaume/Jane Rau	Tony/Jules Hess	Dennis Morrill
Charles/Leona Clapper	Bill Hill	Phil Pierce
Don/Rebecca Conry	Ormond Irish	Robert Poirier
Richard Cummings	Mark Johnston	Jeffrey Preble
David Cunio	Mary Louise McEwen	Joanie Rhoda
Keith Curtis	Michael Levey/Michael Brown	Clifton Smith
Nancy/Leonard Duffy	Craig Lewis	Rick Stuart
Eric Ellis	Doug/Nancy Ludewig	Laura Woodbury
Mark/Linda Fisher	Tom/Lynda McGuire	

**Congratulations to Mike Brooks**

During the week of 12/26/12 to 1/1/13, Mike was 1 of 10 runners who completed 7 marathons in 7 days. This event takes a lot of endurance fostered with great patience and resilience. This was Mikes second year of completing this event.

The title of the event is called the SavageSeven named after the founder and first organizer.

**Well done, Mike!!!!**

## RACE CALENDAR 2013

**NOTICE:** All race dates, starting times & race fees are always subject to change: Please contact race director as races approach to double check facts. **\*Directed by a Central Maine Strider**

### JANUARY 2013

27- "JANUARY THAW 4.5 MILER", Gene Roy/generoy1@gmail.com/Ron Paquette

**REGISTRATION INFORMATION: FEE: \$5.00 START:** Belgrade Central School at 11 a.m. Registration starts at 10 a.m. **No pre-registration.**



The Penguins are coming!

Penguins will once again make their one day only appearance in Maine in time for the January Thaw. You old timers may remember in years past, how penguins clustered at the finish of the Central Maine Strider's 4.5 mile race in Belgrade. This year's race is scheduled for 11 am on January 27 at the Central School in Belgrade.

### FEBRUARY

9- "WICKED FROSTY 5-MILER", Nicole Pisani/207-221-5420/nicole@trimaine.com

**REGISTRATION INFORMATION: FEE: \$25 T-SHIRTS: Additional \$15**

**START:** New Maine Running Co., Marginal Way, Portland at 9:30 a.m.

### MARCH

17- "KERRYMAN PUB 5K", David Arenstam/207-229-4377/davidarenstam@gmail.com/Saco/12 noon

### APRIL

14 - "BOYS/GIRLS CLUB 5 MILER", Tony Myatt/207-873-1069/tonedog86@gmail.com

**REGISTRATION INFORMATION: FEE: \$15 before 1/31; \$18 until race day; \$20 race day T-SHIRTS: First 500**

**START:** 277 Cumberland Avenue, Portland at 12 noon

## CENTRAL MAINE STRIDERS

cmstriders@myfairpoint.net

P.O. Box 1177  
Waterville, ME 04903

*We share the roads.*



# Striders

## January 16—February 15

Shiloh Ring	January	16	Sam Mitchell	February	07
Linda Benn	January	21	Tony Hess	February	10
Rose Smith	January	25	Bob Bachorik	February	11
Erzsebet Nagy	January	29	Jonah Lagin-Nasse Hull	February	14
Michael Deschenes	January	29	Nancy Lagin	February	14
Barbara Brosius	February	03	Don Conry	February	15