

4 LIFE FITNESS NEWS

Celebrate | Heart Rate Zone Training | Articles & Web Talks

Newsletter

- Heart Rate Zone Training for Longevity.
- Celebrating our 3 Year Anniversary.
- Our Agile 4 Life Fitness Inspiration.
- Check out the articles in the Reading Corner.

Birthdays

A Very Happy Birthday to:

Barbara Cook - Feb 1

Alan Tom - Feb 5

Flo Haedt - Feb 20

Joy Fletcher - Mar 31

New Members

Welcome to our fitness family:

Robin Setchko, Jan's sister.

Carōn Klopping, a friend of Jan & Robin Setchko.

Jane Allen, a friend of Robin Setchko.

Maria Cruz, from the Y and the creator of "Changes", the best weight management program ever!

Poonam Dey, mother of Deep Dey.



Use Heart Rate Zone Training for Better Performance & Longevity

by Joy Fletcher

A couple of months ago I read a very interesting article about heart rate zone training. (Thank you Maria Cruz for sending.) It was interesting because it took a deep dive into the benefits of training at Zone 2 and actually linking it to longevity. The unfortunate part of the article was that the author, Dr. Howard J. Luks, a leading Orthopedic Surgeon & Sports Medicine Specialist, jumped into the article like everyone knew all about each of the 5 training zones.

Since the original article had so much great information, I'm going to fill-in the gaps and start at the beginning. I want you to be able to reap all the benefits of understanding heart rate zone training, specifically the benefits of training at Zone 2.

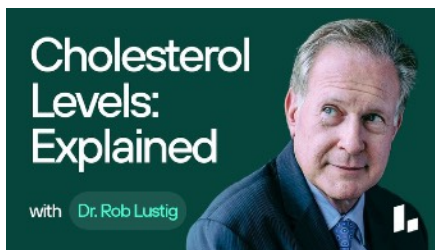
In the original article, **Zone 2 Heart Rate Training for Longevity and Performance**, it's made very clear that training in different heart rate zones engage different aspects of our physiology. For this very reason it's important to vary your training intensity using heart rate as your guide.

If you wear some sort of heart rate monitor it's easy to track. If you have no monitor, use your first 2 fingers to check your pulse at your wrist (follow the line of your thumb down to find the spot) or at your carotid artery at the side of your neck and count the number of beats for either 30 seconds and multiply by 2 or count for a whole minute or 60 seconds. *(continued on page 3)*



The Reading Corner - For Better Health & Fitness

- [Zone 2 Heart Rate Training For Longevity & Performance](#) by Howard J. Luks, MD (7/11/22)
- Web talk with **Dr. Robert Lustig**; *Understanding Your Cholesterol Panel & Metabolic Health Tests* (1/6/22)



Fitness Inspiration

Abbe Blum is our next fitness inspiration. She just turned 70 years young this Jan. and is a long term Circuit participant who started back at the Berkeley Y. Like many of the other "regulars", she happily moved to online classes during COVID.

Before beginning circuit, Abbe already had a deep appreciation for the human body due to her practice of Tibetan Yoga. She admits however, that the A4LF classes have given her a better understanding of the aging process so she can "live most fully in this latest stage of my life."

Abbe says, "One element that has resulted from Covid-enforced home exercise is that I now incorporate stretching into my week. I confess that without the regularity of your Wednesday stretch plus what is in the library this aspect of my self care would fade out."

Showing up and being there to establish healthier habits is true dedication. Way to go Abbe! BTW - you look marvelous.



Agile 4 Life Fitness Celebrates Year 3

It's amazing to think our fitness community is celebrating it's third year of working out together. By far, the best part for me as been listening to excited members discover they're stronger, their posture is better, their balance has improved, they have more endurance, or they're more flexible. Or maybe they have less pain, feel more energetic, or have the confidence to tackle the adventures on their bucket list! I never grow tired of hearing or reading your testimonials.

For members who are new to Agile 4 Life Fitness, or if you'd like to take a trip down memory lane, here's the A4LF timeline:

- March 11, 2020 - CDC declares COVID-19 a pandemic.
- March 12 - California is the first state to order shelter-in-place.
- March 16 - Gyms are ordered to close.
- March 18 - Joy reaches out to old members to offer online classes.
- March 23 - The first online Circuit Class is taught .
- March 30 - The "online studio" is named Workout With-Us.
- April 24 - The first Hot Tamales evening PT group is taught.
- June 1 - The first Stretch Class is taught.
- August 17 - Lori Cable joins & teaches the first Gentle Yoga Class.
- September 7 - A video library is started.
- September 8 - Lori teaches the first Intermediate Yoga Class.
- September 9 - The first ReStart Smart Class is taught.
- March 19, 2021 - The name is changed to Agile 4 Life Fitness.
- November 1, 2021 - The first 4 Life Fitness News is sent out.
- September 20, 2022 - It's the first FREE Falls Prevention Workshop.
- October 15, 2022 - Joy becomes sole owner of Agile 4 Life Fitness.
- January, 2023 - New updated Agile 4 Life Fitness website is up.

At the time, you all tried something very different and went way outside your comfort zone to exercise, and that will always humble me. But we all came together for one thing, and that was to maintain our fitness. I hope you feel like you gained fitness and so much more. I hope you feel supported, respected, and valued. And I want you to know when I 'gently' push you to your limits, I do so with love and the desire to keep this group of exceptional baby boomers living your best life, stronger, more balanced, and proving to the skeptics that the science of aging actually works!

Heart Rate Zone Training *(continued from page 1)*

As I mentioned, there are 5 training zones. The chart below shows how the zones are related to heart rates and the physiological effects that take place in zone.

Zone 1 Recovery/Easy	55%-65% Heart Rate Max	Used to get your body moving with minimal stress and exertion. This zone might be used for an easy training day, warming up or cooling down.
Zone 2 Aerobic/Base	65%-75% Heart Rate Max	Used for longer training sessions. You can sustain this basic-effort zone for many miles, yet still chitchat a little bit with your workout partner.
Zone 3 Tempo	80%-85% Heart Rate Max	This is a zone where you push the pace to build up speed and strength; conversation is reduced to single words.
Zone 4 Lactate Threshold	85%-88% Heart Rate Max	In this zone your body is processing its maximum amount of lactic acid as a fuel source. Above this level, lactic acid builds up too quickly to be processed and fatigues the muscles. Training in this zone helps your body develop efficiency when you're operating at your maximum sustainable pace.
Zone 5 Anaerobic	90% Heart Rate Max & Above	This maximum speed zone (think closing kick in a race) trains the neuromuscular system—your body learns how to recruit additional muscle fibers and how to fire muscles more effectively.

For reference, the physical activity guidelines state that adults should try to do at least 150 to 300 minutes a week of aerobic activity at moderate-intensity which is 50%-70% of your Heart Rate (HR) max which is basically Zones 1 & 2. Or you should try to do 75 to 150 minutes a week of vigorous-intensity aerobic activity which is 70%-85% of Heart Rate (HR) max which will place you in Zones 2 & 3.

As you look through the chart, you see that everything is based on your Maximum Heart Rate (HR Max). Your HR Max is the absolute fastest rate your heart is able to beat. The rate is determined by your body, age, and fitness level. It is also affected by medications — some designed to make sure your heart does not increase to its max.

The most accurate way to get your HR Max is to have a stress test. This is normally recommended and done by a cardiologist in a lab. The simplest way to get your HR Max is to use this [revised formula](#):

$$208 - 0.7 \times \text{your age.}$$

Here's where we get into the good stuff! Dr. Luks explains that the real benefits of heart rate zone training is what happens inside the muscle cells and the energy system that it uses, per the [mitochondria](#). (Mitochondria produce ATP, the main energy molecule used by a cell.) Training in Zones 1 and 2 will actually improve mitochondrial number, function, flexibility, efficiency, and fitness. Thus improving aerobic health or how easily you breathe while exercising.

Zone 2 training, also called low HR (heart rate) training or base training, can be used when cycling, swimming, rowing, running, or walking. Using this low HR zone training technique, according to Dr. Luks, is one of the best tools for achieving metabolic health and longevity.

This is significant because “most of the chronic diseases which will lead to our demise have a common root cause — poor metabolic health due to poor mitochondrial function.”

Poor metabolic health refers to the inflammatory process that happens in the body and leads to insulin resistance, type 2 diabetes, hypertension, dementia, cancer, allergies, coronary artery disease, arthritis, strokes, bowel, kidney disease and more.

When it comes to mitochondria the issues to be concerned with are: (as listed by Dr. Luks)

1. **The number of mitochondria you have.** To increase the number of mitochondria it's recommended that 80% of your active training be done in Zone 2 or 1. It will take about 6 months to alter your mitochondria physiology so be patient. The tangible results will be more endurance, better resilience, stamina and speed.
2. **The metabolic “flexibility” of your mitochondria.** This refers to the ability of your mitochondria to utilize fat and glucose as an energy source. Exercising at a low heart rate means your main source of fuel should be fat and not glucose. If you have poorly functioning mitochondria you'll have an inability to utilize fat versus glucose. Unfortunately, this metabolic inflexibility is found in about 75% of people.
3. **Mitochondrial efficiency.** When the body goes immediately to using glucose for energy it produces excess lactate. The lactate can build up in the muscles if it can't be used quickly enough for energy and cleared away. The problem with excess lactate is it's accompanied by a hydrogen ion. The hydrogen ion changes the pH in its local environment. When we are exercising that ends up being the skeletal muscle, and a change in the pH produces weakness and exhaustion.

“Zone 2 heart rate training enables you to use fat as an energy source for longer, and more efficiently. Thus you preserve your glycogen stores for longer. Glycogen gets broken down into glucose which serves as your fuel source for higher-intensity efforts. One end product of using glucose is lactate. Now lactate isn't as bad as you think it is. In trained individuals, they can shuttle the lactate back into the cell and use it as fuel! That requires an active transporter... MCT-1. The more Zone 2 exercise you perform, the more of that transport protein you will make. That improves your ability to clear the lactate. The mitochondria will take the lactate in and use it as fuel.”

To optimize your muscles' mitochondrial function it's important to remember that there are 2 types of muscles. There is Type 1 or slow-twitch muscle and Type 2 or fast-twitch muscle. As you might suspect, the Type 1 fibers are rich in mitochondria and prefer fat as an energy source for fuel. The Type 2 fibers are glycolytic, which means they burn glucose and produce lactate.

When glucose is used for fuel, the lactate produced can overrun the system. The hydrogen ions will change the environment around the muscle cell and make it less powerful. Dr. Luks writes, “you can lose up to 50% of your muscle power as hydrogen builds up. That is the hallmark of fatigue.”

When you're training, the goal is to fire all of your Type 1 fibers and to not fire your Type 2 fibers. The recommendation is that you train these Type 1 muscles for a minimum of 45 minutes staying in Zone 2 heart rate the whole time. If your heart rate increases at any time to Zone 3 it will change the physiology and you will no longer be training your mitochondrial aerobic base. Even if you try to slow down after being in a higher zone, it will take a while to recover from the lactate build up and return to fat oxidation.

To be clear, even in Zone 2 you will burn some glucose as fuel and there will be a slight rise in lactate. But the levels should stay at a point where you can maintain your efforts.

According to Dr. Luks, the reason why you can maintain a low heart rate for a long time is that the body has an infinite source of energy available in terms of our fat stores.

Another way to gauge if you're training at Zone 2 is to monitor your breathing. If you can breathe through your nose the whole time and you can't "hear" yourself breathe it's more reflective of being in Zone 2. If you can talk easily in full sentences without having to pause, speak or sing with an occasional pause to breathe, you're probably in Zone 2 as well. If you can't speak more than a few words without pausing, that probably means you've moved into Zone 3 or above.

Dr. Luks says that for many exercisers staying at Zone 2 can be difficult. Especially if you've been used to exercising hard and leaving yourself breathless and fatigued. Going all out at the end of a workout is still acceptable, but to reap the benefits of Zone 2 training it should be done only after spending at least 45 minutes totally in Zone 2.

The last important step in the article is how to find your heart rate range for your training. Dr. Luks calls it "heart rate reserve". He finds the heart rate reserve by using a formula that includes the percentages in the chart of the 5 Zones, resting heart rate, and HR Max.

The best way to find your resting heart rate, if you don't have a device, is to check it first thing in the morning before you get out of bed. Again, you can either count your pulse at your wrist or your carotid artery for 30 seconds and multiply by 2 or count for a full 60 seconds.

To find what your heart rate reserve, plug your numbers into this formula:

% as 0.__(HR Max — HR at rest) + HR at rest.

Example: If I was calculating my heart rate reserve for Zone 2...

To find HR Max: $208 - 0.7 \times 68 \text{ (age)} = 160.4$

My resting heart rate according to my devices is generally 50 beats per minute (bpm)

To train in Zone 2 at 65%-75% of HR Max I would calculate:

$0.65 * (160 \text{ {HR Max}} - 50 \text{ {HR at rest}}) + 50 \text{ {HR at rest}} = \mathbf{121 \text{ bpm}}$

$0.75 * (160 \text{ {HR Max}} - 50 \text{ {HR at rest}}) + 50 \text{ {HR at rest}} = \mathbf{132 \text{ bpm}}$

The other benefit of training in Zone 2 for 80% of the time, is it reduces the chances of overtraining. Overtraining can result in injuries or re-injuries, which are an all too common problem in older adults. You often hear me say, form is everything. But when our muscles are fatigued, and now we know why that happens, it's harder to keep good form and you're more likely to sustain an injury.

Personally, I learned so much more about heart rate training than I ever knew! The best part is, it appears that being a bit more structured in my workouts by monitoring my heart rate more closely, can easily improve my metabolic health without adding any extraordinary efforts. And for most of you it's probably the same. You can be a bit more deliberate in what you're already doing and reap the benefits of boosting your mitochondria and their function, thus improving your longevity.

I know there is a lot of information here, so if you have any questions about this article, feel free to email me or ask before or after class.