

# Essential Fatty Acids and Cell Membrane Health in the Human Body

## Structure Dictates Function

Your body is made up of tens of trillions of cells of which about 350 billion are replaced on a daily basis. Every system, structure, organ and tissue are made up of these cells. What we call human health literally can be boiled down to a single question...how healthy are your cells?

Within the cell various functions from creating proteins, to messaging, to making energy (and much more) dictate how well that cell contributes to the greater whole...your overall health. Cellular operation is dependent upon internal components and external forces for help. The internal components are only as healthy as its ability to take in nutrition, to be able to 'hear' and respond to messages, and the ability to evacuate wastes.

### **All internal cellular activities must have 4 qualities to function optimally:**

- 1) like a manufacturing plant the ability for a cell to function at its highest level starts with quality components (building blocks that enable the cell to 'do things')
- 2) fuel for energy production 'to get things done'
- 3) the ability to eliminate waste byproducts (the result of all of this activity going on) and avoid getting toxic
- 4) the ability to 'hear' and follow directions so that the cell 'does the right things at the right time'

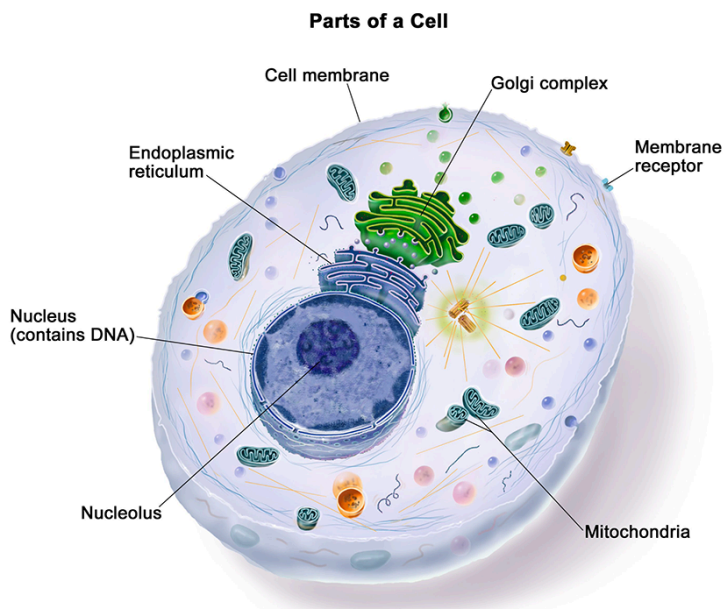
All of this is important but there is a limiting factor to any and all of the above 4 things happening in the first place. Nutrients and various forms of messaging come from the outside and in order for these vital activities to have the highest positive impact to the inside function of the cell they first need to be able to pass through what we call the **cell membrane**. Once energy has been expended then the waste products need to exit through the same membrane. ***The reality is that cell membrane structure ultimately dictates the internal functioning of the cell.***

### **What determines cell membrane health?**

Your cell membrane structure is determined by the ratio of various essential fatty acids. These are called **essential because they must be consumed through the diet** as the body does not

## The World's Most Significant Health Problem

manufacture them. Therefore it is easy to understand why it is important to make sure that your diet consists of a balance of the proper essential fatty acids. The alternative creates a cell membrane structure that will not only hinder the cell from being healthy but will actually work directly against it as well.

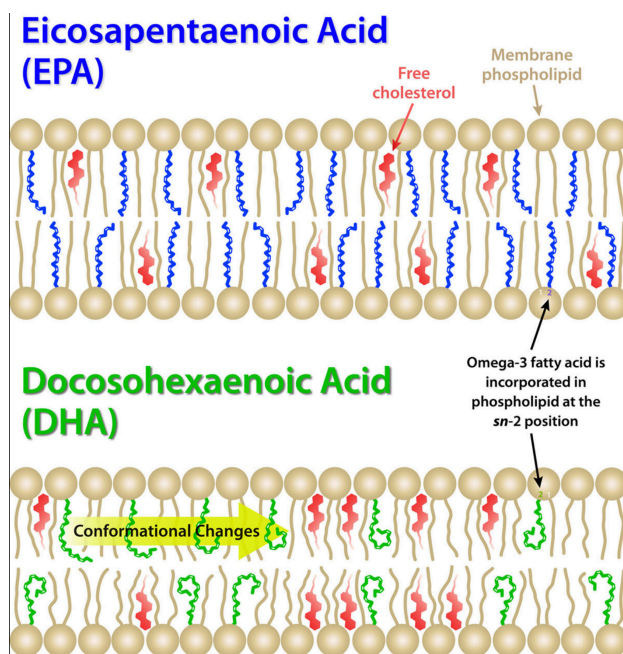


### Functional portions of the cell

There are a number of different essential fatty acids (EFAs) that all contribute to the structure of the cell membrane but we can easily break these down to **3 categories**. These are:

1. Saturated Fatty Acids
2. Omega 6 Fatty Acids
3. Omega 3 Fatty Acids

If you look at the image to the right you will see the essential shape of two of the primary Omega 3 fatty acids (blue is EPA and green is DHA). What makes them distinct is that their tails are kinked at the end. This is not true for Saturated Fatty Acids and it is less true for Omega 6 Fatty Acids.



### Cell Membrane Structure with Omega 3 Fatty Acids

## The World's Most Significant Health Problem

Saturated fatty acids are straight and create a rigid and non-resilient cell membrane. And, although Omega 6 fatty acids are a step in the right direction (as Omega 6 fatty acids have a slightly kinked tail), the super power of Omega 3 fatty acids is they create the most space and flexibility for the cell to have its best chance at functioning at its highest levels. Nutrients come in all sorts of shapes and sizes and it is of paramount importance for the structure of the cell membrane to be such that it accepts every available nutrient that can help the cell function at optimal levels. Likewise, waste products also need plenty of spaces (within the cell membrane) to be pushed out of the cell in order for the cell to stay toxic free and able to function at its highest levels.

All variations of ratios between these three fatty acids that make up the structure of the cell membrane create a combination of strength, fluidity (flexibility) and adequate space. If the membrane has too many saturated fatty acids the cell wall will be too rigid and very few nutrients will enter the cell and only a small amount of waste will be allowed to exit the cell. Add some Omega 6 fatty acids and this problem is improved slightly but still highly inadequate for true health. The actual issue of the structural problem of the cell membrane literally boils down to how many Omega 3 fatty acids are present. The proper ratio is imperative to give the cell its full ability to function at its highest potential.

One other aspect of this that needs to be addressed is how the fluidity of the cell membrane gives it the ability to adapt to any sort of external forces it might come across. For example, the cell membrane of a muscle will be able to tolerate much more 'force' from the outside without tearing when the proper amount of Omega 3s are present than when they are deficient. Or, another example is the ability for the red blood cell to 'morph' its shape so that it can make the long and twisty journey of eventually being able to deliver nutrients and oxygen to other cells. The final portion of this journey is through tiny capillaries that are too small for these cells to travel through without being able to elongate and twist themselves to be able to fit and flow through to the other side.

### What is the proper ratio of these Essential Fatty Acids?

The discussion of ratios seldom includes Saturated Fatty Acids as the numbers of SFAs will largely take care of themselves when Omega 6 and Omega 3 Fatty Acids are balanced properly. So for ease we will simply talk about the Omega 6 to Omega 3 ratios and how they determine cellular membrane structure...which we have already determined dictates the function and health of the cell.

The general consensus of this ratio for any cell to function at a healthy level is **3:1** (that is 3 Omega 6 Fatty Acids for every 1 Omega 3 Fatty Acid within the cell membrane). **This is good but optimally the ratio would be as close to 1:1 as you can possibly get.** The difference in quality of life will be profound.

## The World's Most Significant Health Problem

If you look at the image on the right you will see the primary issue of cell membrane health. That is, only with a soft and flexible cell membrane with plenty of open spaces within it (only created by Omega 3 fatty acids) will the full array of nutrients enter into the cell and all of the waste byproducts exit the cell. This is only possible if there are enough Omega 3 fatty acids in the diet to accommodate the vast needs of cellular reproduction (again 350 billion new cells every single day) to be able to make healthy cell membranes day in and day out.

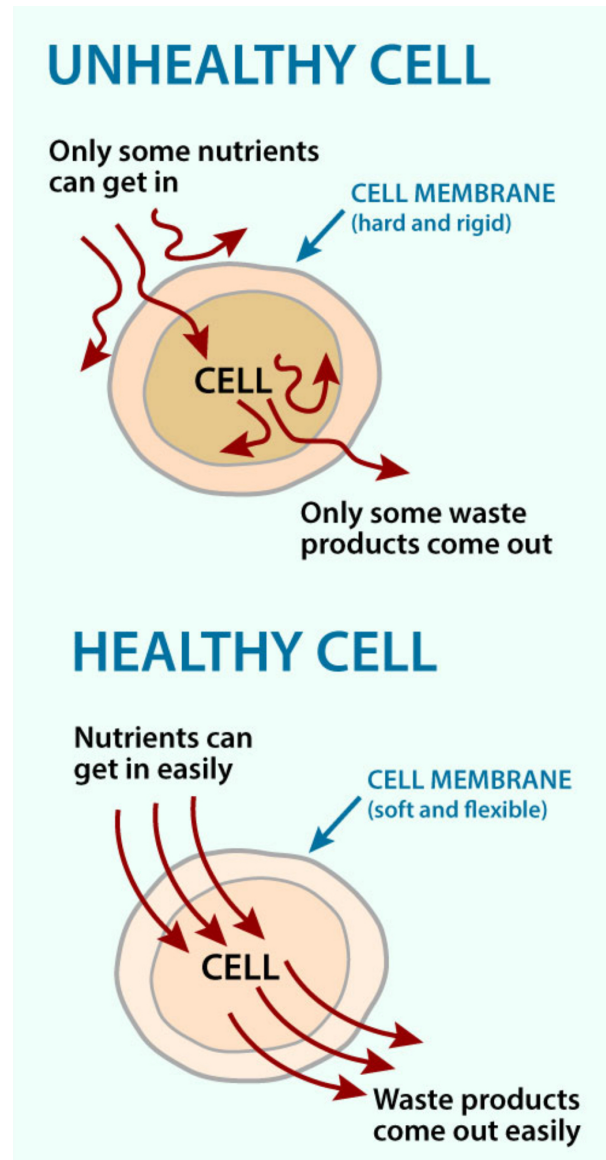
In summary, the ratio of essential fatty acids in the diet will dictate the structure of the cell membrane enabling the most effective transfer of nutrients in and wastes out of the cell. This in turn determines cellular function and the health of the cell. Since cells are the building blocks of every tissue, organ and system in the body then it becomes one of the most vital concerns for human health. But it doesn't stop at just letting nutrients in and wastes out.

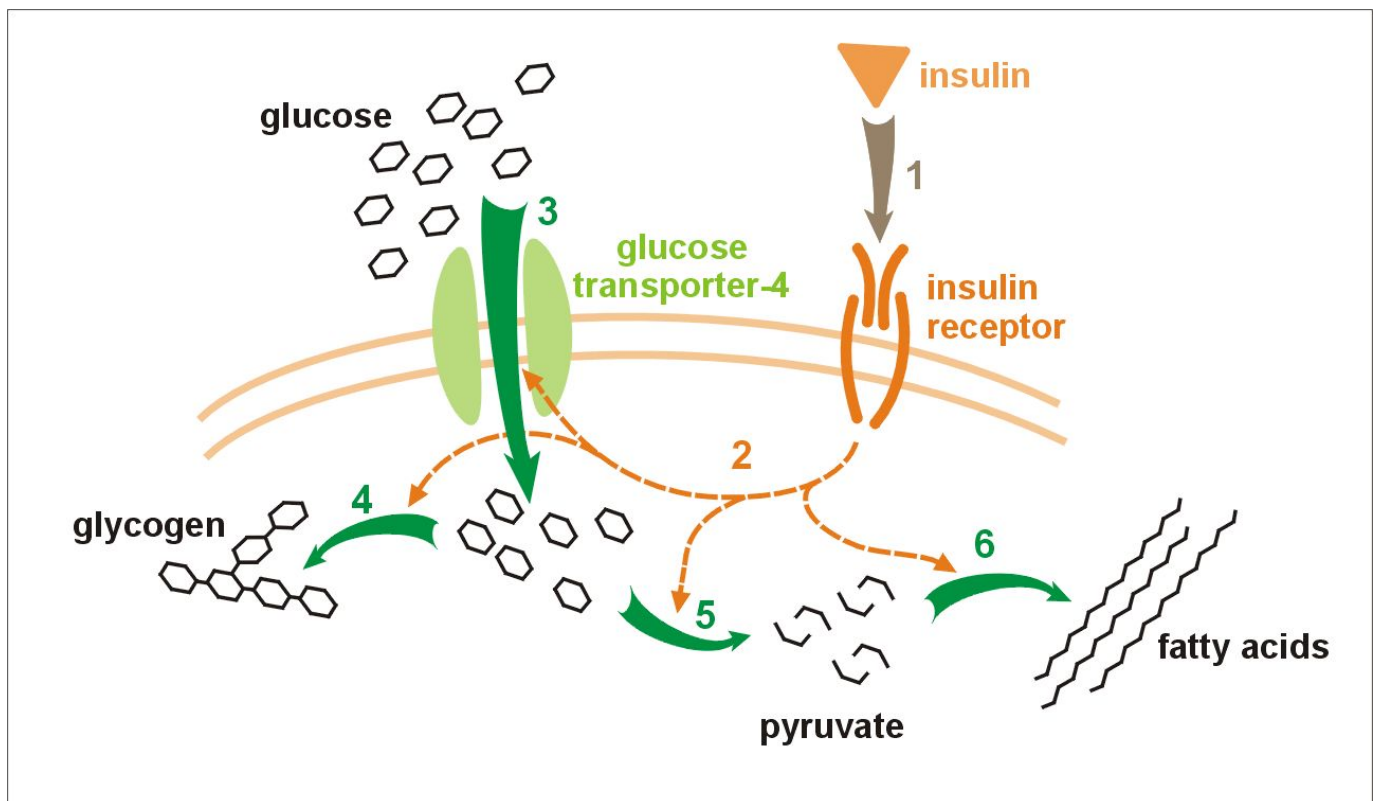
### Cellular Communication is hindered or enhanced because of membrane structure

Again, cell membrane structure becomes a key component to health in terms of cellular communication. Without proper cellular communication your cells will not know 'what' to do nor will they know 'when' to turn on or off specific activities. This creates havoc and confusion within the human body and will not allow the cell to function at its highest and best.

**I will give just one example but it is an important aspect of human health:**

When you eat sugar your body 'notices' it and then responds by sending out a message to your cells. This message is literally carried by the messenger protein we call insulin. Insulin is a hormone that travels throughout the body 'looking' for receptors to 'talk to.' When insulin comes across an insulin receptor it passes on a message to the internal workings of the cell to have it open up to receive sugar (for energy). This alerts the cell to turn on a glucose transporter molecule to actually provide the passageway of the circulating sugar into the cell.





These 2 proteins (insulin receptor and glucose transporter) reside within a healthy cell membrane.

Certain organelles within the cell (ribosomes) manufacture these proteins. These proteins are then distributed into the cell membrane so that they can do their work. **The dirty little secret, however, is that this only happens in a properly structured cell membrane.** If the cell membrane is not structured properly (i.e. there is not enough space to insert these proteins because of a lack of Omega 3 Fatty Acids present) then the proteins cannot be put into the cell membrane and so insulin travels around never finding 'anyone' to communicate with and the end result is that blood sugar levels just keep rising. When the signal is not able to reach the cells (because the insulin receptor proteins are not present inside the cell membrane) then sugars have no other place to go and therefore this causes multiple chain reactions in the body (none of them good) to deal with all of the excess sugars.

This is simply one example of dozens (maybe hundreds or more) of how important the structure of the cell membrane is to enabling cellular communication to happen.

**Cellular Membrane Health affects nearly every aspect of health. Here are a few important examples:**

### **1. Inflammation**

The Omega 6 to Omega 3 ratio dictates the amount of inflammation that is present on both sides of the coin. On the one hand inflammation is absolutely necessary for proper immune function but on the other hand the over abundance of inflammation is the single most damaging force in the human body. It is of vital importance to get this balance right (Omega 6 to Omega 3).

### **2. Brain and Nervous system health**

Not only do the brain and nervous system respond directly to balanced amounts of DHA (a key Omega 3 fatty acid) but what we call the blood brain barrier is essentially dependent upon proper membrane health and structure as well. The blood brain barrier will not function properly if this membrane structure does not have the ideal ratio of Omega 6 to Omega 3 fatty acids.

### **3. Gut Barrier**

The barrier that divides the gut from the rest of the internal body where it resides is also dependent upon the ratio of Omega 6 to Omega 3 fatty acids. And it is for the exact same reason. The gut barrier is merely made up of cells with membranes that either allow nutrients through or block toxins from entering into the body at large. The cell membrane structure of these barrier cells is of vital importance to regulate this exchange properly.

### **4. Heart and Cardiovascular health**

Heart and cardiovascular health is obviously one of the primary concerns of the western world especially. Inflammation and vascular wall health plays a critical role in keeping this important system working optimally. Again, the ratio of Omega 6 to Omega 3 fatty acids largely determines not only blood vessel health but blood cell health as well. Plus, when these ratios are in proper balance (as mentioned above) inflammation levels are kept in balance.

### **5. Future health concerns and disease states**

Knowing your essential fatty acid ratios and what they mean can help you not only get an insight as to what your future health concerns might be, or whether you will be more or less prone to various disease states, but also how to improve your health status both now and for the future. It is well documented that your essential fatty acid ratios are a very accurate reflection of both current and



future health states. It is one of the foundational pieces of information that each and every individual should know. Just as one checks fluid levels in a car checking levels of essential fatty acids is imperative for managing your health journey. What you don't know might just be heading you to a very desperate and difficult place. On the other hand, what you know can give you the precise knowledge you need to make choices that can change the trajectory of your personal health journey and give you a better and more hopeful future.

There are particular numbers such as the Omega 3 index that are very good indicators of how you are doing internally and where you are heading in the future. Knowing your Essential Fatty Acid levels is one of the most important things you can do for yourself.

## Test Don't Guess

This is not anything to neglect. If you are currently taking Omega 3 supplements then you are at least likely heading in the right direction. It is unlikely they are working the way you think they are but at least you should be congratulated for taking the initial step of doing something about this problem.

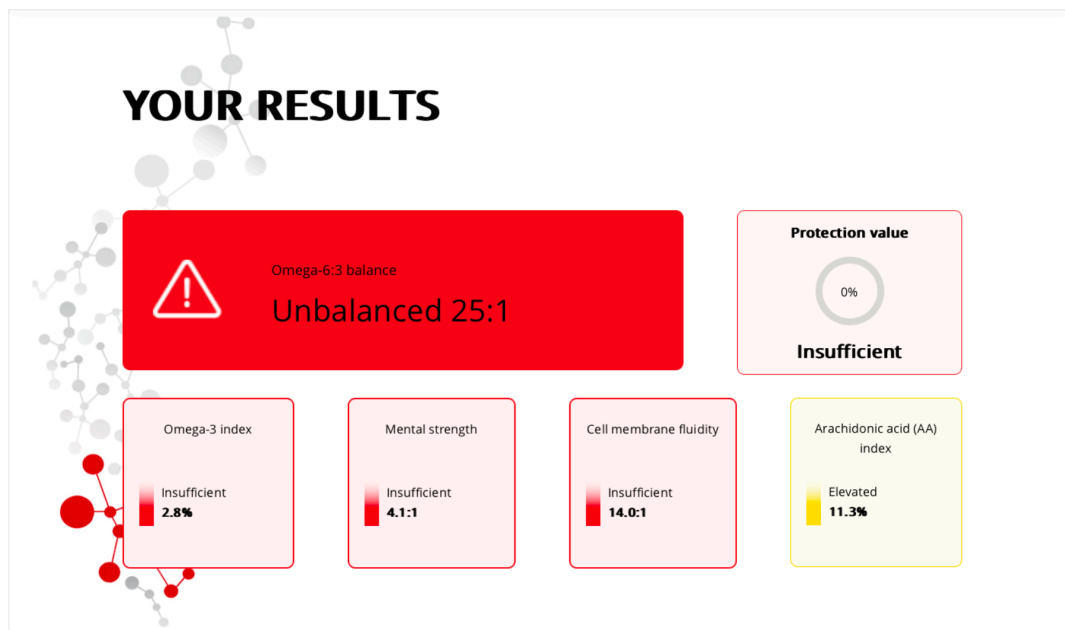
The unfortunate problem, however, is that any Omega 3 supplement (outside of what will be discussed below), that you might take is unfortunately not going to be nearly as helpful as you would hope. **But, the good news is you simply have to test.** Zinzino has done over 1.5 million blood spot tests that test 9 separate essential fatty acids. With these numbers a whole host of health related information can be calculated. The test literally takes a few minutes and simply takes a prick of the finger to provide the small amount of blood necessary to get an accurate test. This is the only test of its kind in the world. This test will show you exactly where you stand and what you can do about it.

### 3 samples of actual tests:

The test results that you get are extensive with very good explanations as to what the following information means. The full test results also provide a myriad of helps and other information to help you understand exactly what is important as you take the next steps on your health journey.

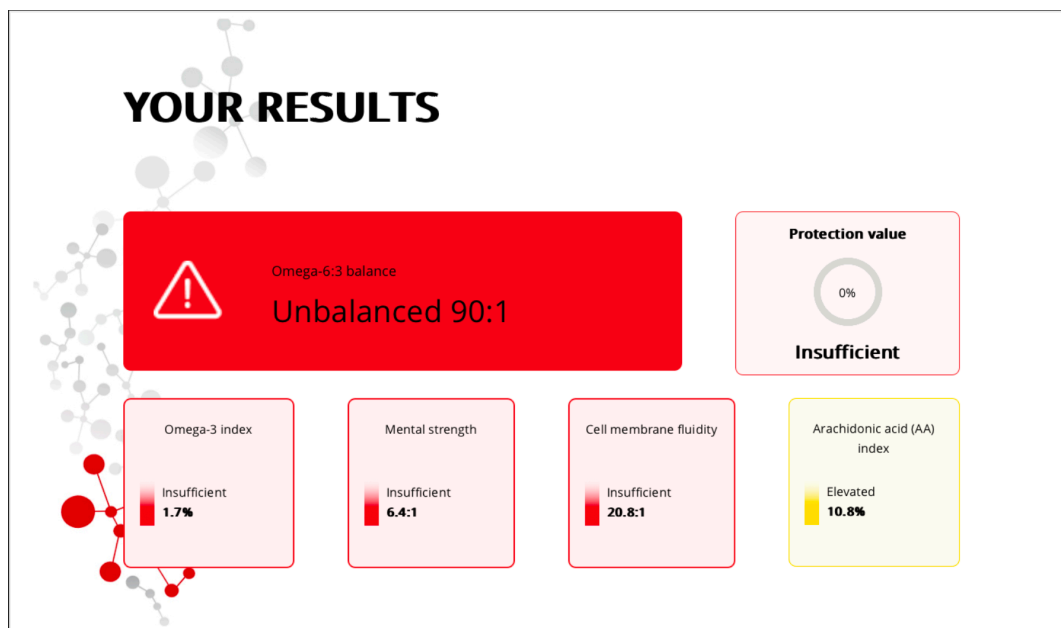
This particular tests was chosen because it is representative of the average American. The average American has a starting Omega 6 to Omega 3 ratio of 25:1. But, the starting point itself is not as important as knowing what it is. This is the point. It is imperative to know. Then you can do something about it.

1.

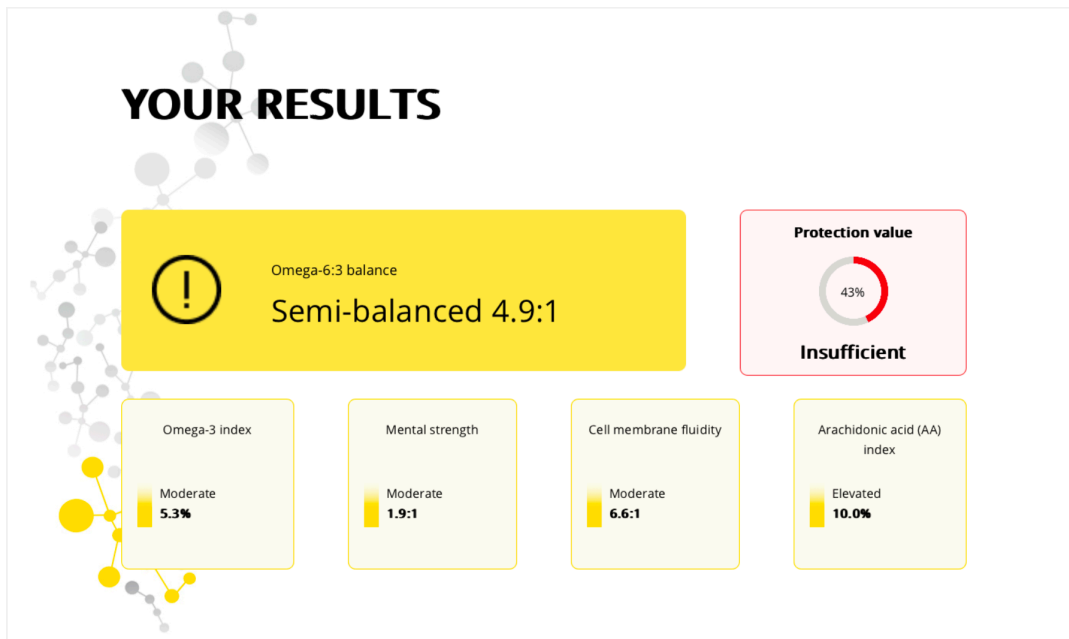


I also wanted to share 2 other actual tests. The first is an extreme example of being out of balance and the 2nd is a vast improvement of the same person in a very short amount of time. The first test was done before taking the Zinzino Balance Oil [covered below] and the second after taking just a normal dosage for a period of 4.5 months (notice it is over an 1,800% improvement...imagine after six months or a year what is possible!):

2.







## Next Steps

The most important thing is to test. Then you know. With knowledge comes the power to act. However, just knowing doesn't fix the problem. Neither does taking any number of Omega 3 supplements in the market place. In fact, there is only one Omega 3 supplement in the world that has been proven to work. As I mentioned above there are 1.5+ million tests to back up that statement. The very best thing you can do for yourself is to order the Zinzino Balance Oil plus two tests. The first test will come with your first order and the second will come after 4 months on a subscription. It is the only way to not only know but to fix the problem. Remember you are not alone. Nearly every one of those 1.5+ million tests came back showing the Omega 6 to Omega 3 ratios out of balance (99+%) on the first test. If you are already in balance after your first test then congratulations. You would be the anomaly for sure. Nevertheless it is important to be sure. It is nearly a guarantee that you are out of balance and that your health is suffering (getting worse every year you age) so please do something about it, if not for yourself than for those who love you and want the very best for you.

## The World's Most Significant Health Problem

### Here is what I recommend when beginning:

#### 1. Start with the Health Protocol Protocol Premium Kit:

\$218 for the first order (which includes payment for 2 tests at a huge discount; and then \$144/month thereafter on a subscription

##### **First delivery**

- 1 BalanceOil+, 300 ml
- 2 Xtend, 60 tablets (*immune balance*)
- 1 ZinoBiotic, 180 g (*gut health*)
- 1 Viva+, 60 tablets (*sleep, mood, stress and brain health*)
- 2 BalanceTest\*



\* You can find one BalanceTest in your first delivery, while your second BalanceTest will be delivered after 120 days so that you can do them at the right time to see both your “before” and “after” results.

This is a well-rounded overall health protocol that has proven to be highly beneficial in all areas listed above. If you want to spend less then purchase one of the kits below:

## 2. Balance Test Basic Kit:\*\*

*\$115 for the first order (which includes payment for 2 tests at a huge discount; and then \$43/month thereafter on a subscription*

1 BalanceOil+, 300 ml

2 BalanceTest\*



\* You can find one BalanceTest in your first delivery, while your second BalanceTest will be delivered after 120 days so that you can do them at the right time to see both your “before” and “after” results.

## 3. Balance Oil+ w/test:\*\*

*\$135 for the first order (which includes payment for 2 tests at a huge discount; and then \$63/month thereafter on a subscription*

1 BalanceOil+, 300 ml

1 BalanceOil+, 100 ml

2 BalanceTest\*



\* You can find one BalanceTest in your first delivery, while your second BalanceTest will be delivered after 120 days so that you can do them at the right time to see both your “before” and “after” results.

**\*\*The difference between #2 and #3 is simply amount of oil. The dosage for each individual is based entirely on weight and some people need more or less than others. A good benchmark is that 160-170 lb person would use exactly one 300 ml bottle/month while a 190 lb person would use one 300 ml bottle plus one 100 ml bottle/month. There are exact directions on every bottle but this gives you a good benchmark to start.**