

Dr Demopoulos,

I am a customer of yours in the Performance club and I was hoping you could clear up a few issues.

I recently read an article about how people who performed winter swims trained their bodies to produce more GSH by than non swimmers.

<http://qjmed.oxfordjournals.org/cgi/content/full/92/4/193>

The article related that one hour after a winter swim GSH was depressed, while GSSG was increased (Table 1).

However, over time, the repeated mild oxidative stress of a winter swim improved the baseline levels of GSH, since the GSH in the winter swimmers was substantially higher than in controls subjects that did not participate in winter swims. (Figure 1)
(Similarly baseline levels of GSSG was much lower in winter swimmers than in controls.)

Now I try to partially mimic this effect of winter swims by taking a cold shower every morning. However, I am concerned that if I take Ultrathione 500 soon after my shower in the morning, I won't train my body to produce more GSH because it will already have plenty due to the supplement.

Your recommended time of day for the supplement is after breakfast and after lunch. Is there any reason that I couldn't take one in the late afternoon and one in the evening? Do you have any idea how long I should wait after my shower before a take the Ultrathione?

Furthermore, since the additional GSH levels due to the supplement seem drop off quickly, why do you suggest two doses close together, rather than spreading out the times by taking one dose in the morning and one in the evening? It seems that most others suggest that antioxidants (such as Vitamin C) be spread out as much as possible.

Thanks

AL N.

Mr. N.

Thank you for the article on winter swimmers. The laboratory studies were rigorous and related only to winter swimmers, wherein the body is totally immersed in cold water, while the individual swims and maintains *core* body temperatures.

There is no way to even partially mimic this, with cold showers, or even purposeful exposures to cold air.

I do not recommend: winter swimming, cold showers, purposeful exposures to cold air. The reason is that the majority of adults over 40, both males and females, already have significant atherosclerotic disease in their coronaries, carotid arteries, and cerebral arteries. They can not afford the risk of cold-induced spasm (narrowing) of already compromised arteries and having a reasonably good lipid profile (cholesterol, HDL, LDL) does not mean your arteries are in good shape, since approximately 50% of people who have a heart attack due to coronary artery disease have normal lipid profiles.

One of the things that fools people is that the autopsies on the type of patient just described often shows only partial occlusion of the coronary artery by atherosclerotic plaque, with seemingly adequate remaining space. That's because the acute spasm (narrowing) of the artery, secondary to cold or a heated argument, or over-exertion physically, disappears at the time of death because the smooth muscle cells in the arterial walls relax, thereby creating a false post-mortem appearance of only *partial* occlusion.

Regarding dosing regimens, there are four times during the day when the stomach is relatively empty and when GSH should be taken by people who need "peak" levels (individuals who have an illness, or have persistent stresses, or prone to infections) :

- (i) first thing in the morning or arising, but 40 minutes before breakfast;
- (ii) between breakfast and lunch;
- (iii) between lunch and dinner; and
- (iv) ~ 30 minutes before the hour of sleep.

It is almost impossible to guess what and when and how much GSH an individual's body will produce because the variables are immense:

- (i) times and quantities of sugar-loading;
- (ii) times and quantities of fat-loading;
- (iii) times and quantities of alcohol-loading;
- (iv) times and extent of significant physical stress or emotional duress;
- (v) times and quantities of using acetaminophen (paracetamol) or illicit drugs, all of which destroy glutathione. Further, if an individual does 2 or more of the above, the risk of losing too much GSH rises greatly.

A final point, measuring red blood cell GSH for short term changes is generally difficult because red blood cell GSH changes occur slowly. In this particular publication,

the winter swimmers may have brought about special changes in their cells that do not occur widely in most people.

Harry B. Demopoulos, M.D.