

Ross' Precision Health & Fitness Newsletter

Issue #7 – 2/1/2007 – Spot Reduction and Hydrogenated Oils

Now that it's a month into 2007, you should have rebounded from your year end setbacks and discontinued any bad habits you may have picked up during the holidays. Hopefully you have also taken the time to create some specific goals or at least thought about what you want to accomplish this year. If you have, I assume at least one of your goals is related to losing fat or eating healthier.

Since most of the questions I have been asked recently have been about fat loss and nutrition, I decided to make them the focus of this newsletter. The article will focus on the important nutritional issue of hydrogenated oils/fats. But before that, I want to address a critical fat loss issue that most people are aware of, but tend to forget when it comes to designing their own exercise programs:

There is no such thing as spot reduction – No matter how often this is said, people still want to believe they can lose fat in a particular area by exercising specific muscles (spot reduction). The most common areas people are concerned with are the abs and arms. As a result, people often end up doing many exercises to isolate those muscles, hoping to burn fat in those specific areas.

As you hopefully know, this is not the way the human body loses fat and spot reduction training most definitely does not work. You will lose fat throughout your entire body with any type of exercise, regardless of the muscles being used. Exercising specific muscles will however make them stronger, firmer, and improve their appearance, which may create the illusion that more fat is being lost around those muscles.

In actuality, performing excess exercises for the abs and arms at the expense of other muscles will ultimately decrease your overall fat loss. Exercises that isolate the abdominals, biceps, or triceps have a smaller impact on the body than exercises that use larger muscles or incorporate many different muscles at one time. Exercises such as squats, lunges, chest/shoulder presses, and back rows/pulldowns have much greater physiological effects on calorie burning, hormonal adaptations, overall fitness, and of course fat loss.

While exercising any muscle causes fat loss throughout the body, this doesn't mean that fat will be lost evenly. There is one factor that does have a significant impact on where you lose fat and that is your genetics. Most people have specific areas where they easily accumulate fat or store a proportionally larger amount of fat compared to the rest of their body. These are typically referred to as problem areas and they will vary from person to person.

Problem areas are typically the first to gain fat and the last to lose it, so they are often significant obstacles to long-term fat loss. Luckily there is one approach that is generally successful in dealing with problem areas, but it may not what you want to hear. The key is dedication and consistency with your nutrition, as well as variety and progression with your exercise. Initially you may not lose fat from the areas you want, but if you stick with it, you will start losing fat from those problem areas.

If on the other hand, you have good eating and workout habits some or even most of the time, you may experience some positive fat loss, but once you stop exercising or start eating poorly, the fat you lost from your problem areas will be the first to return. If you are serious about long-term fat loss, you have to make exercise and nutrition a priority throughout your life.

Now with that out of the way, I want to focus on nutrition. Since nutrition is so important for fat loss and people often ask me what specific foods they should eat, I wanted to approach the issue by looking at foods that people should avoid. Many of these “bad” or “junk foods” have one particular ingredient in common, hydrogenated oil, and that is the topic of the article.

Featured Article

The Truth Behind Hydrogenated Oils and Fats In General

Over the last decade, there has been a lot of press about the negative effects of hydrogenated oils and trans-fats, which recently led to New York City passing the first law to ban the use of hydrogenated oils in restaurants. Yet even with all the negative publicity about hydrogenated oils, few people actively avoid consuming them and only a very small percentage of people really understand what they are and why they are harmful.

This article is designed to explain some of the differences between fats and take the mystery out of hydrogenated oils and trans-fats. It will also explain how eliminating hydrogenated oils from your nutritional program will improve your long-term health and fat loss. However, before getting to hydrogenated oils, I will cover some basic scientific information about fats that is necessary to fully understand why some fats are good and hydrogenated oils are bad.

The science of fats: The main part of a fat molecule is made up of carbon atoms chained together with hydrogen atoms attached to their sides. When all of the carbon atoms have hydrogen atoms attached to both sides, they form a saturated fat. If one hydrogen atom is missing, the fat is monounsaturated and fats with multiple hydrogen atoms missing are called polyunsaturated.

This by itself is not too important, but whenever a hydrogen atom is missing (unsaturated), there will be a double bond between the carbon atoms instead of the usual single bond. You may be wondering why this is significant, but understanding the double bonds is the key to understanding hydrogenated fats and fats in general.

The double bond between carbon atoms along with the missing hydrogen atom allows the fat molecule to be more versatile and becomes useable for various physiological reactions throughout the body. Fats with double bonds have many beneficial effects, such as improving your immune system, heart health, mood, skin, energy, nutrient absorption, and much more.

Some fats are more beneficial than others and generally the more double bonds the fat contains, the more positively it will affect your body. Probably the most well known beneficial fats are the Omega-3 oils found in fatty fish, which have either 5 or 6 double bonds. On the down

side, fats with more double bonds are also more fragile and susceptible to physical manipulations. The importance of this will become apparent when you read about hydrogenation.

Saturated fats (no double bonds) on the other hand can only be used as energy for the body and cannot be used in the cellular reactions that create the beneficial effects listed above. In addition any extra saturated not needed for energy will be stored as fat. There is however one benefit to saturated fats: they are very durable and are highly resistant to physical alterations.

Hydrogenation is a manufacturing process used to alter unsaturated fats, generally to increase the shelf life of packaged products. This change is achieved by altering unsaturated fats at the point of their double bond(s). Unsaturated oils can either be completely hydrogenated or partially hydrogenated and each process affects fats differently. It is also important to note that saturated fats cannot be hydrogenated, because they have no double bonds or missing hydrogen atoms.

When an unsaturated fat is completely hydrogenated, it essentially becomes a saturated fat. Unfortunately there are also some additional unnatural compounds created during the process that are not found in natural saturated fats. After this process, the fat will have almost an indefinite shelf life, although it loses all any health benefits associated with the original fat.

Completely hydrogenated fats are generally only used with fats that are almost completely saturated to begin with and they are less common than partially hydrogenated fats. This is unfortunate, because contrary to how the name sounds completely hydrogenated fats are actually less unhealthy than partially hydrogenated ones.

As the name implies, partially hydrogenated fats do not undergo the full hydrogenation process. This means the fat does not end up resembling a saturated fat and there are even more unnatural compounds produced during this process than full hydrogenation. In addition, permanent damage is done to the double bonds that change their properties from healthy to unhealthy.

Bear with me for just a little bit more science, because this is what the previous information has been leading up to. When double bonds are in their natural occurring state, they are in a “cis” configuration. You don’t have to remember this, but you do need to know that during hydrogenation the “cis” configuration gets altered into a “trans” configuration. In other words, hydrogenation turns healthy unsaturated fats into unhealthy trans-fats.

In the past it was believed that saturated fats were the unhealthiest fats, but in recent years trans-fats have taken over that title. It is important to note that since trans-fats are created by altering unsaturated fats, you will never find trans-fats in saturated fats or completely hydrogenated fats. Also, healthier fats with many double bonds are easier to corrupt during the hydrogenation process.

I hope you feel somewhat comfortable with the science behind fats, because it helps explain why trans-fats are so unhealthy. As previously discussed, unsaturated fats are used in many beneficial chemical reactions throughout the body and the double bonds are key to these

reactions. Trans-fats maintain the appearance of a healthy unsaturated fat and the body can't tell the difference between them. Unfortunately, there is a big difference in the way they function.

When your body tries to use the trans-fats in necessary physiological reactions, they will not be effective. Trans-fats essentially stop the beneficial reactions from taking place, which can affect virtually every important system within your body. Some of the many negative effects include: impairing heart performance, weakening your immune system, weakening the protective barrier around cells, and disrupting the function of essential fats.

Now that you have read the science, here is some additional practical information to help you limit your consumption of trans-fats. While it is true that partially hydrogenated oil is a major source of trans-fat, it is not the only one. Simply exposing unsaturated oils to high temperatures, such as when frying food, will alter double bonds and create trans-fats. Since fats with many double bonds are quite fragile, they can be turned into trans-fats at much lower temperatures than fats with only 1 double bond (monounsaturated).

This is one of the reasons many people recommend using olive oil in cooking. Olive oil is monounsaturated and potentially has some additional health benefits due to nutrients found in the oil. However, if you are cooking with very high heat, it is actually better to use a saturated oil, because there will be no chance of creating trans-fats during the cooking process. In any case, try to avoid cooking with polyunsaturated oils and never use liquid Omega-3 oils in cooking.

I hope this does not scare you away from eating fish, because fish fats are among the healthiest things you can consume. Just be sure to minimize the amount the fats are damaged or altered by cooking the fish at a low temperature for the shortest time possible. It is usually easy to tell if these fats are going bad, because the fish will develop a fishy smell. Contrary to what many people believe, fish is not supposed to smell fishy. The fishy smell is actually the smell of the fat turning rancid.

I am sure you have encountered this smell if you have ever purchased Omega-3 oil pills. Often the bottles are exposed to heat on store shelves and the fats are significantly damaged even before the bottle is opened. When these bottles are first opened there is a strong unpleasant smell, which is a good indication that the product will not be as beneficial as it should be. Generally these pills are not worth the money and you would be much better off buying some fresh salmon or other fatty fish.

Now you may be asking yourself, what does all of this have to do with fat loss. Since you have had enough science for one day I will skip the science and go straight to the bottom line. Anything that disrupts your body's normal physiological functioning will effect fat loss and hydrogenated and trans-fats prevent or disrupt many necessary chemical reactions within the body, thus making fat loss more difficult and less efficient.

In addition, products containing hydrogenated oils and trans-fats are generally unhealthy for other reasons and also contain additional ingredients detrimental to fat loss. Hydrogenated oils are typically found in products with high total fat contents, high sugar contents, low nutrient

values (empty calories), and generally high calorie contents. If you are able avoid all products containing hydrogenated oils, you will be well on your way to a healthier life and greater fat loss.

Ending note: trans-fats are just one of the many unnatural byproducts created from hydrogenation, but they get the most attention because they are the most abundant byproduct and we have a decent understanding about how they affect the body. Unfortunately, there are many other byproducts that we still do not understand and chances are they are unhealthy as well. Many hydrogenated products are now advertising no trans-fats, but that does not mean they are healthy. The best-case scenario is the fats have simply lost their health benefits. More likely, they probably contain other compounds that are just as unhealthy as trans-fats. Only time and research will determine what those other compounds are and how they affect the human body.

WRAP UP:

Well that's it for this issue. I hope the scientific information wasn't too boring or confusing, because it's important for understanding what you eat and how it affects your body. Plus it's helpful to know when reading labels and listening to advertising. Typically, whenever a product or ingredient is widely considered to be unhealthy, such as trans-fats, companies using those ingredients will start making changes to their original product. Then they will go out of their way to promote the new product without the unhealthy ingredient. Their hope is that people will think there is no more reason to avoid eating the product. Unfortunately the bad ingredients are typically replaced by something just as bad or something that adds more empty calories. In any case, an unhealthy food with one less unhealthy ingredient is still an unhealthy food.

Take care, stay healthy, and keep up the good work,

Ross

P.S. If you want to learn more about hydrogenated oils and fats in general, I recommend reading *Fats That Heal, Fats That Kill: The Complete Guide to Fats, Oils, Cholesterol and Human Health* by Udo Erasmus. Much of the information in this article is from that book and it is a great resource for anyone wanting to learn general or specific information about all types of fat.