Fats

Types of fat
All fats have the same basic chemical structure, yet each varies by how many hydrogen atoms and double bonds it holds. The shape of the carbon chain helps determine the properties of the fat. Slight differences in structure can lead to crucial differences in function.

The three types of fats are:
1. Saturated fat
2. Unsaturated fat
    - monounsaturated fats (olive oil, avocados, etc.)
    - polyunsaturated fats (Omega-3 fats: salmon, walnuts, flax seeds, etc.; Omega-6 fats: processed foods, vegetable oils)
3. Trans fat

All foods contain a mix of fat types, but one type usually predominates.

Saturated fats
These are physically solid at room temperature.
Food sources include butter, lard, bacon grease, dairy fats, animal foods and coconut oil.
Saturated fats raise the total blood cholesterol by raising harmful LDL, but they also raise beneficial HDL. Researchers dispute how helpful this increase in HDL is.

Unsaturated fats: Monounsaturated and Polyunsaturated
Monounsaturated (MUFA)
Food sources include olive oil, avocado oil, nuts, seeds and olives.
MUFAs decrease LDL (bad cholesterol) and maintain HDL (good cholesterol), which benefits heart health.

Polyunsaturated (PUFA)
Food sources include fish oils and vegetable oils.

There are two primary types of polyunsaturated fatty acids:
- Omega 3
- Omega 6

These are the essential fatty acids (EFA) — meaning our bodies cannot make them and they must be consumed in the diet. While both Omega-3 and Omega-6 fats are essential to life, a healthy diet should contain a balanced ratio of both. The optimal ratio has not yet been determined; however, it is believed a ratio of 1-4:1 Omega-6 to Omega-3 is ideal. The typical Western diet is 20:1. Our diet's higher ratios of Omega-6 to Omega-3 promote chronic disease.

Omega-3 fats

There are three types of Omega-3 fats:
- Alpha-Linolenic acid (ALA)
- Eicosapentaenoic Acid (EPA)
- Docosahexaenoic Acid (DHA)

ALA is found in plant oils, walnuts, flax seeds and chia seeds. EPA and DHA are found primarily in fish and algae and are known as marine oils. Although the body uses ALA for energy, it is also converted to EPA and DHA although this conversion is variable and inefficient. Polyunsaturated

fats trigger mechanisms in the liver for removing cholesterol from the body. The Omega-3 fats promote healthy heart rhythms, prevent heart attacks and lower triglyceride levels and increase HDL. They are also anti-inflammatory.

Omega-6 fats

- Linoleic Acid (LA)

They are primarily found in processed foods and in some vegetable oils (soybean, peanut, safflower, corn, sunflower).

The Omega-6 fats are a family of both pro-inflammatory and anti-inflammatory polyunsaturated fatty acids. Their biological effects are to initiate the inflammatory response (pro-inflammatory) and alert the immune system of cell damage. They subsequently promote the production of anti-inflammatory molecules during the resolution phase of inflammation. A high intake of Omega 6 relative to Omega-3 fatty acids causes a shift to a more inflammatory state. Inflammation is a protective mechanism but when prolonged and uncontrolled, it is associated with many diseases (CVD, cancer, arthritis, diabetes, etc.).

Trans fats

Trans fats are also known as partially hydrogenated oils and are found in solid margarines, vegetable shortening and commercially processed foods. The food industry creates trans fats through a hydrogenation process, which turns oils into solids, to prevent foods from going rancid and prolongs their shelf life. These fats do not meet the distinction of being “generally recognized as safe” for human consumption. They are highly toxic and are being phased out and banned in our food supply.

Trans fats:

- Raise LDL and inflammation
- Lower HDL
- Increase risk for cardiovascular disease and chronic diseases