Outline

Function

Lipids of interest

Triglycerides

Cholesterol

Saturation & Structure

Sat, MUFA, PUFA, Trans

Essential fatty acids: Omega-3 & Omega-6

Fats & exercise

Specific forms of cholesterol

Vascular diseases

What are the major functions of body lipids?

Structure

Lipids in all cell membranes

Insulation & padding

Metabolic regulation

Hormones

Blood clotting

Absorption of fat soluble vitamins

Energy source

9 calories/gram

What are triglycerides?

Fatty acids & saturation

Saturated: all C have H ions attached

Monounsaturated: having 1 double bond

Polyunsaturated: having > 2 double bonds

**Omega-3 & -6** FA: double bond is at 3rd or 6th carbon from methyl/omega end

Chemically treated oils:

Hydrogenated and partially hydrogenated

Trans FA

Types of fatty acids

*Cis* and *Trans* Fatty Acids

Effects of regular exercise on fat burning:

Regular exercisers use more fat than untrained individuals at any exercise intensity

Increased blood flow and capillarization to muscle, delivering more free fatty acids (FFA)

Increased muscle TG content

Increased epinephrine sensitivity by muscle and adipose cells

Increased number and size of mitochondria for processing FFA

Increased FFA transporters into mitochondria

Cholesterol

Not a fat but a sterol

Manufactured in the liver

Found only in animal products

Eat less saturated fat to lower serum cholesterol levels

National Cholesterol Education Guidelines: Fasting levels in mg/dL

Fat: overall health implications

Review terms:

CHD or CAD

Ischemia

Angina

Coronary occlusion

Myocardial infarct

Arteriosclerosis

Atherosclerosis

Positive correlation between serum cholesterol and heart attack

Heart disease risk factors:

High blood pressure

High serum cholesterol

Cigarette smoking

Physical inactivity

Other factors: heredity, diabetes, diet, obesity, age, sex & stress

  Summary

Total fat 20-35% of total calories

Or 1 g/kg

Amount and type of dietary fat matter

Health promoting fats

Avoid diets that are *very low* and *very high* in fat