Developmental Physiology and School Hygiene

Lecture 7

Energy supply of the body.

1. ***Kinds and sources of bodily energy.***
2. ***Methods of bodily energy.***
3. ***Bodily control of energy.***
4. ***Hygiene of energy supply.***

Key terms:

- kinetic energy;
- potential energy;
- "Child of the Sun";
- Gravity;
- Elasticity;
- Oxidation

Forms of Energy.

energy

ability to do work

(inactive)

forms of energy

motion and heat

types of energy

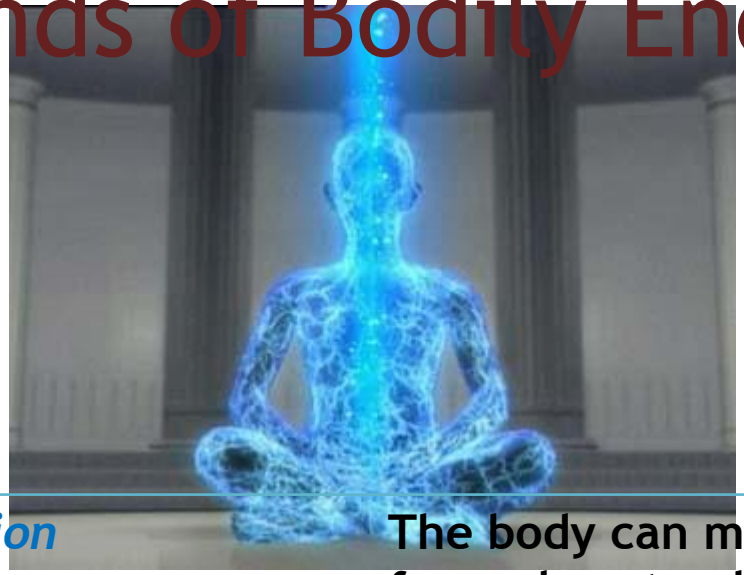
kinetic

(energy at work)

potential

(stored energy

Kinds of Bodily Energy



Power of motion	The body can move itself from place to place and can give motion to things about it.
Heat power	The body keeps itself warm and is able to communicate warmth to its surroundings.
Nervous power	Through the nervous system the body exercise the power of control over its different parts.

Source of Bodily Energy

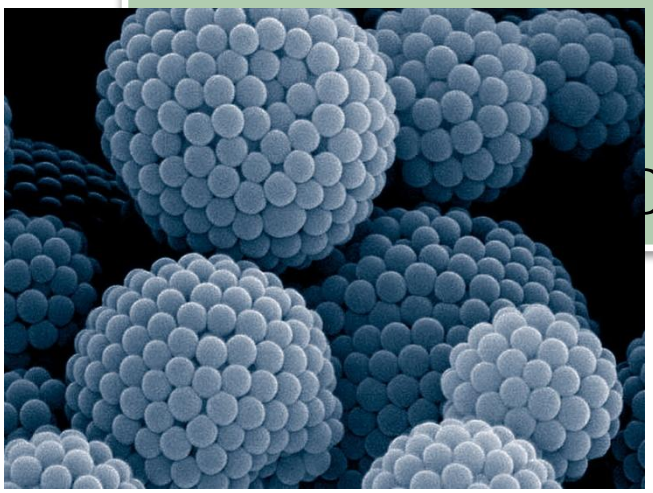
Food

Oxygen

contain energy the potential form

kinetic form through uniting with each other in the body

Oxidation at the cells



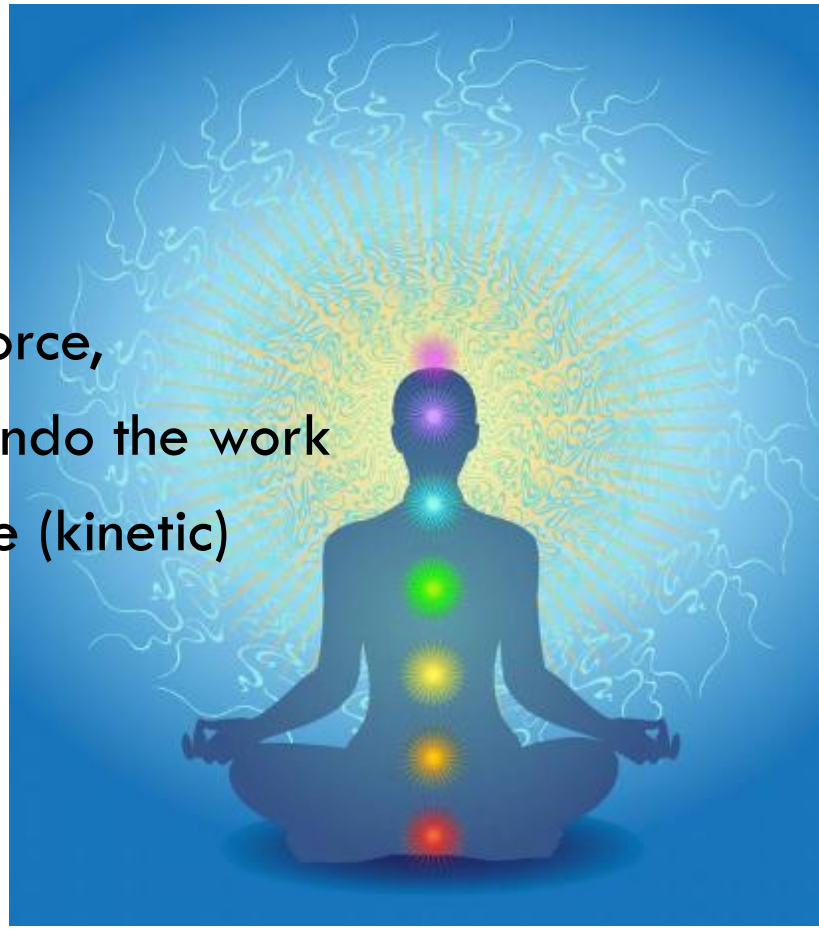
Simple methods of storing energy

Through Gravity

Through Elasticity

Storage depends on 3 principles:

1) The work done
2) The work must be against some force, such as gravity and elasticity undo the work
1) The stored energy becomes active (kinetic)



Sun's energy in Food and Oxygen

1) When a person eats the food and breathes the oxygen, the potential energy of the plants from the sun becomes the possession of the body;
2) Then it is converted into kinetic energy as the needs of the body require.
3) From the Sun to the cells: 'the child of the Sun"– dependence upon the sun for

Bodily control of energy.

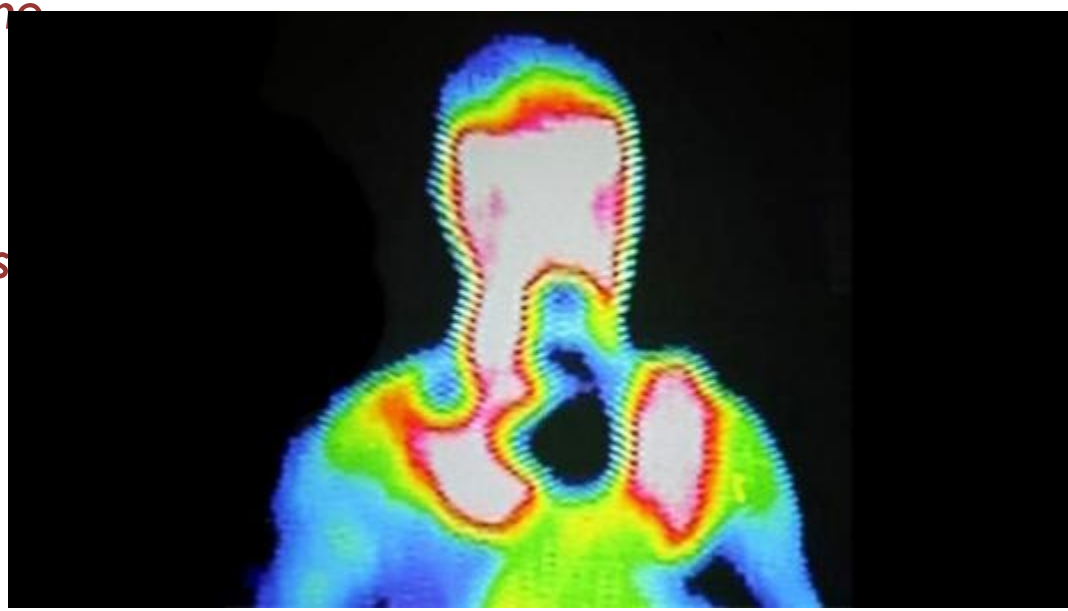
(only a union of food and oxygen can produce energy)

Rule: quantity of kinetic energy supplied to the body is proportional to the work that is done.

It is done through the ability of the body to store up the food materials and hold them in reserve until they are oxidized.

Bodily energy as heat.

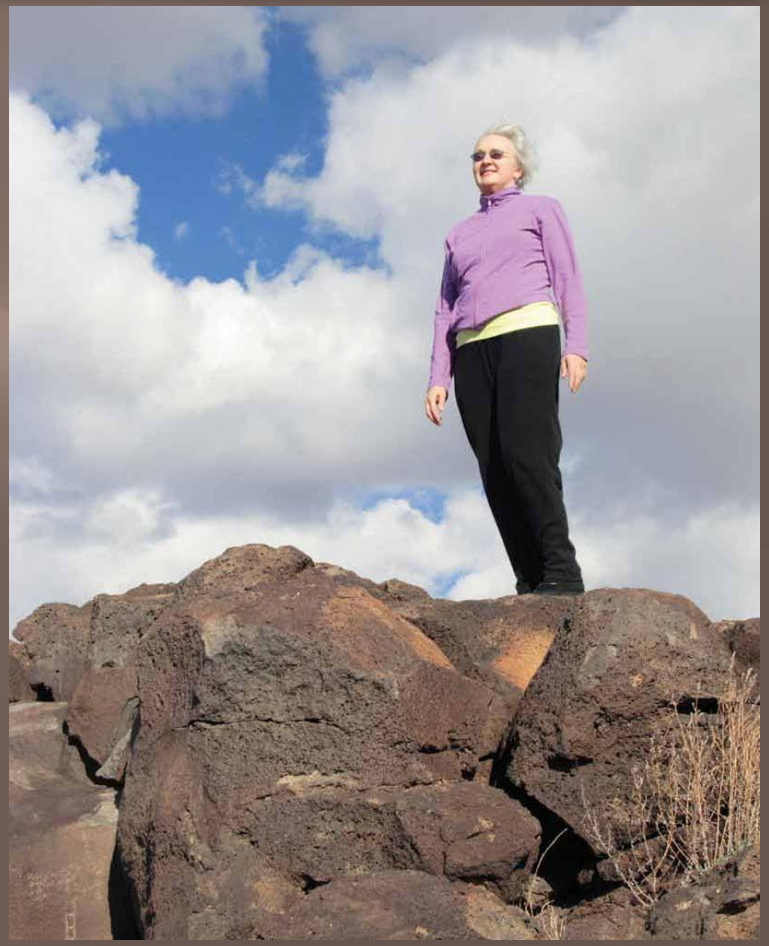
- *5/6 of the whole amount is used to keeping warm;*
- *Important for carrying on the vital processes;*
- *All parts of body (through oxidation) furnish heat (mus brain, liver – larger share);*
- *Blood serves as a heat distributor.*



Hygiene of energy supply

Increase

1) Heat – producing capacity of the body;
2) Heat- producing exercise (in the open air);
3) Introduction of the proper amounts of food and oxygen efficiency of the vital processes.



Hygiene of energy supply

Decrease:

1) **Spending time in poorly lighted and ventilated overheating rooms;**
2) **Wearing heavy clothing and sleeping under excess of bed clothes;**
3) **Overworking your body – too much arousal;**
4) **Taking stimulants: alcohol, tobacco, strong tea and coffee tend to exhaust the bodily resources.**

SEMINAR QUESTIONS:

- 1. In what different ways does the body use energy?
- 2. Show that a stone lying against the earth has no energy, while the same stone above the earth has energy.
- 3. How does potential energy differ from kinetic energy?
- 4. Account for the energy possessed by the oxygen of the air and food substances.
- 5. Trace the energy supply of the body back to the sun.
- 8. Why must both oxygen and food be introduced into the body in order to supply it with energy?
- 6. How may overwork and overexercise diminish the energy supply of the body?
- 7. How may one increase the amount of his energy?