

A young boy with dark skin and short hair, wearing a white shirt, is looking towards the camera with a slight smile. In front of him is a white plate filled with various fruits, including several green apples, a few red apples, and a bunch of yellow bananas. The background is slightly blurred, showing what appears to be a window or a wall with a patterned curtain.

# Nutritional knowledge

**Energy**

Nigeria, March 2005

# Presentation

- Why do we need energy?
- Sources
- Requirements
- Cow's milk & energy
- Check your knowledge

# The key lines

- Important function of food: supply of energy for each and every action the body performs
- Energy = fuel for the body

# Why do we need energy ?

- Growth and maintenance
- Maintaining the body temperature (37 °C)
- Internal activity: digestion, heart-beating, lung functioning, etc.
- External activity: physical activity

# Energy = calories

- Energy can be derived from macro-nutrients
- Energy value is expressed in
  - kcal (kilocalories) or kJ (kilojoules)
  - 1 kcal = approx. 4.2 kJ

# Macro-nutrients supply energy

- 1 g of fat = 9 kcal (38 kJ)
- 1 g of carbohydrates = 4 kcal (17 kJ)
- 1 g of protein = 4 kcal (17 kJ)

Protein only supplies energy in particular circumstances (e.g. in malnourishment)

- e.g. when fat & CHO intake is , protein is used as energy source

# Requirements

- Requirements for energy vary according to individual characteristics
  - age
  - male / female
  - physical activity
- Every country has its own, local nutrient recommendations
  - Internationally: US/Canadian Dietary Reference Intakes (DRIs)

# Estimated Energy Requirement (EER)

- EER = average dietary energy intake to maintain energy balance in a healthy person
  - of defined *age, gender, weight, height and level of physical activity*
- For every year of life the EER can thus be calculated

## Example of calculation

- men >19 years

$662 - 9.53 \times \text{age (years)} + \text{PA} \times (15.91 \times \text{weight (kg)} + 539.6 \times \text{height (m)}) = \text{kcal/day}$

**PA = Physical Activity**

- Inactive: PA = 1.00
- Low active: PA = 1.11
- Active: PA = 1.25
- Very active: PA = 1.48

## Cow's milk & energy Per 100 ml

• Protein	3.4 g	14 kcal	21 En%
• Fat	3.7 g	33 kcal	50 En%
• Carbohydrates	4.8 g	19 kcal	29 En%
• Total		66 kcal	

