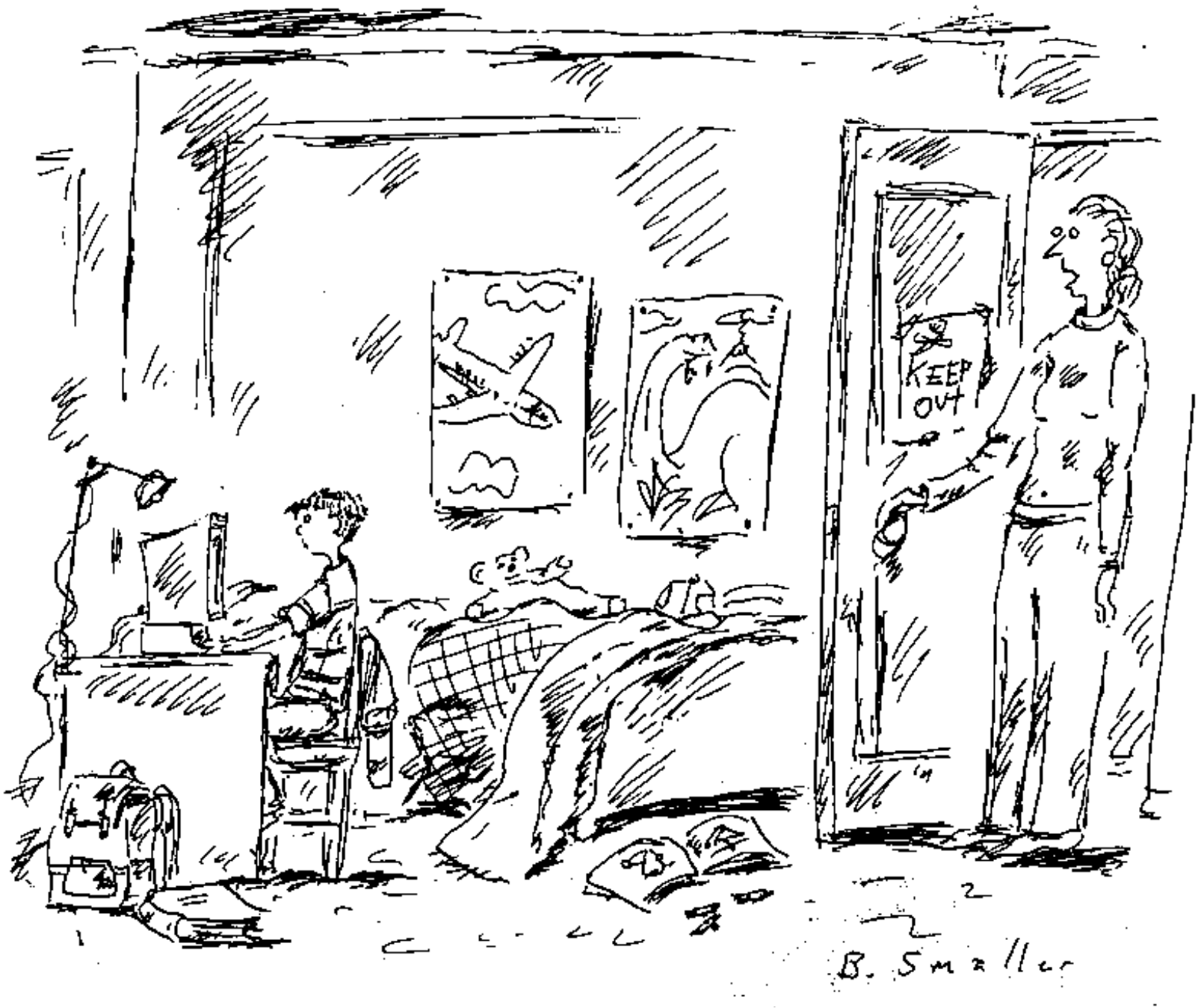
The Developing Generations

1980s = X generation

2000s = Y generation



Why don’t you get off the computer and watch TV?

"The doctor told my husband to double his physical activity, so now he changes channels with both hands."

Physical Activity, Calories and Obesity: The Challenge of Advances in Technology

- The epidemic of obesity
- Technology and reduced physical activity
- Technology and the availability of calories
- The need for integrated solutions

Obesity: definition

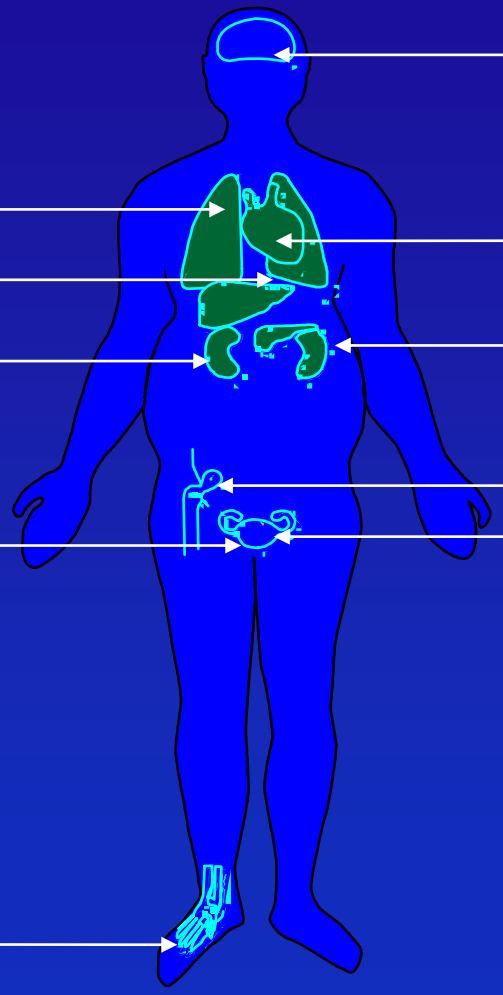
- Chronic disease characterized by accumulation of fat.
- Body weight exceeds ideal by > 20%

Why should we worry about Obesity?

- Medical condition responsible for serious co-morbidity and mortality

- Once it develops it is difficult to ‘cure’ and usually persists throughout life

Consequences of obesity



Stroke

Respiratory disease

Heart disease

Gallbladder disease

Cardiovascular risk factors

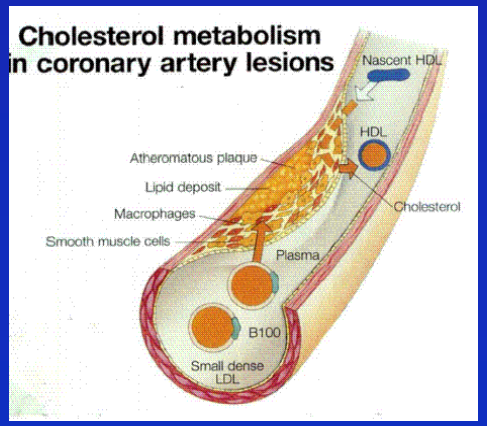
Diabetes

Osteoarthritis

Cancer

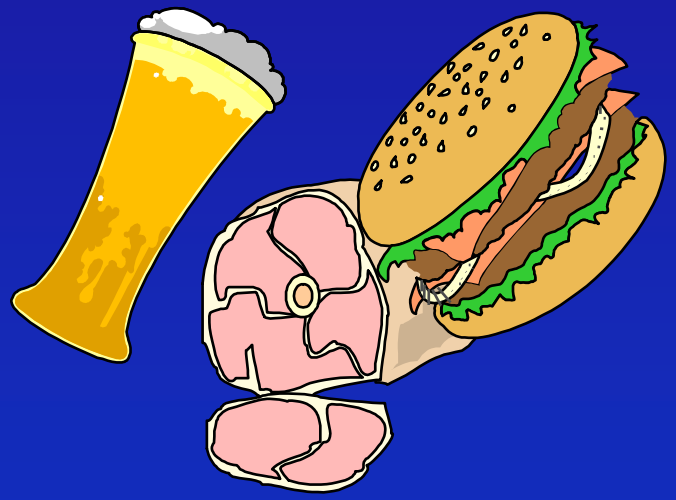
Hormonal abnormalities

Hyperuricaemia and gout

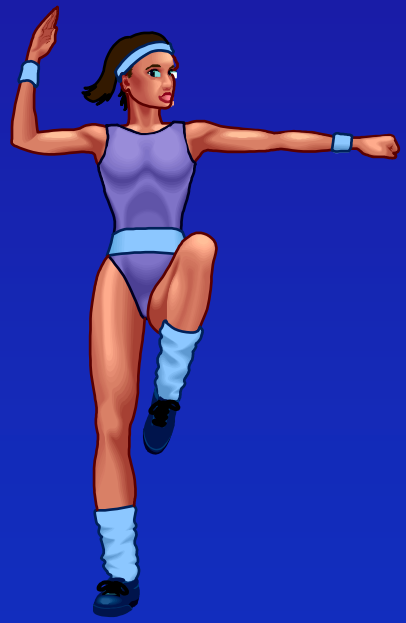


The physiology of weight gain

Energy input



Energy output



Control factors

Genetic make-up

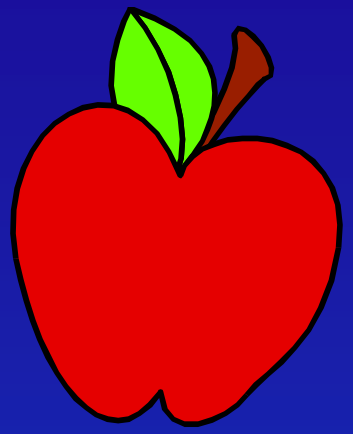
Exercise
Basal metabolism
Thermogenesis

Classification of Obesity by BMI (Body Mass Index)

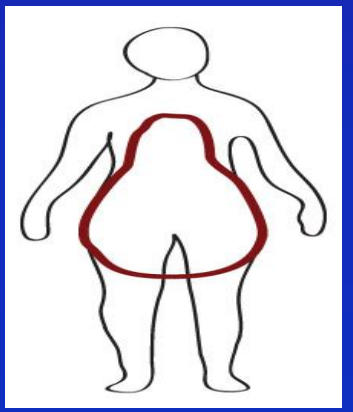
$$\text{BMI} = \frac{\text{Weight (kg)}}{[\text{Height (m)}]^2}$$

BMI (kg/m^2)

	WHO guidelines	Proposed Asia Pacific guidelines
Underweight	< 18.5	< 18.5
Normal	18.5-24.9	18.5-22.9
Overweight	25.0-29.9	≥ 23
At risk	-	23-24.9
Obesity	30-34.9 (Class I)	25-29.9 (Class I)
	35-39.9 (Class II)	≥ 30 (Class II)
Extremely Obese	≥ 40 (Class III)	-



APPLE TYPE	PEAR TYPE
Central or abdominal adiposity (ANDROID)	Lower abdomen and thigh (GYNOID)
MALE	FEMALE
Larger waist circumference	Larger hip circumference
Higher morbidity	Lower morbidity



Central obesity: Abdominal girth

Indicator of central obesity/ internal fat

Desired waist circumference

<94 cm in men

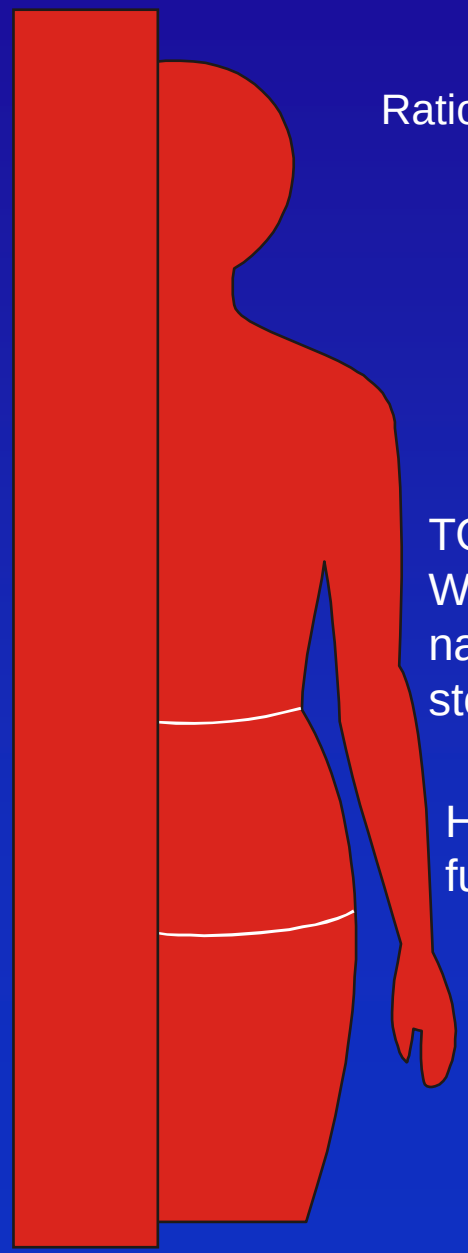
<80 cm in women

Central Obesity: Waist-to-hip ratio

Desired WHR

<1.0 in men

<0.8 in women



$$\text{Ratio} = \frac{\text{WAIST}}{\text{HIPS}}$$

TO FIND RATIO
Waist: Measure at narrowest point with stomach relaxed

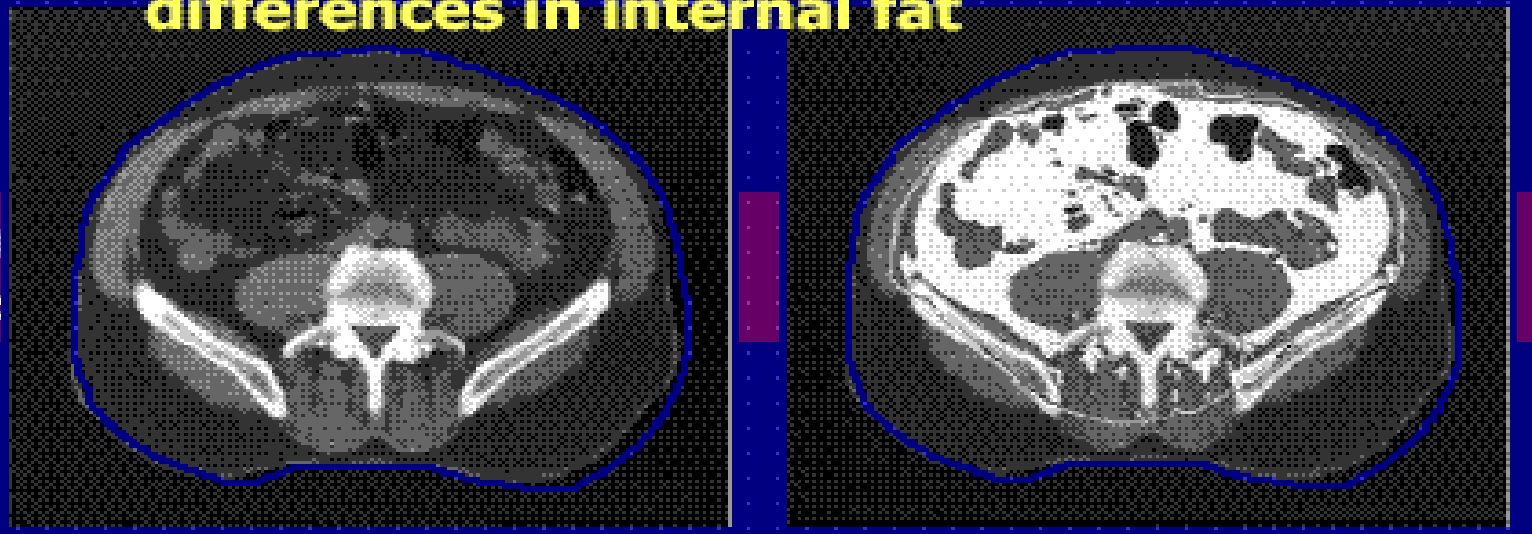
Hips: Measure at fullest point

Why waist is so important?

People with same amounts of total fat can have major differences in internal fat

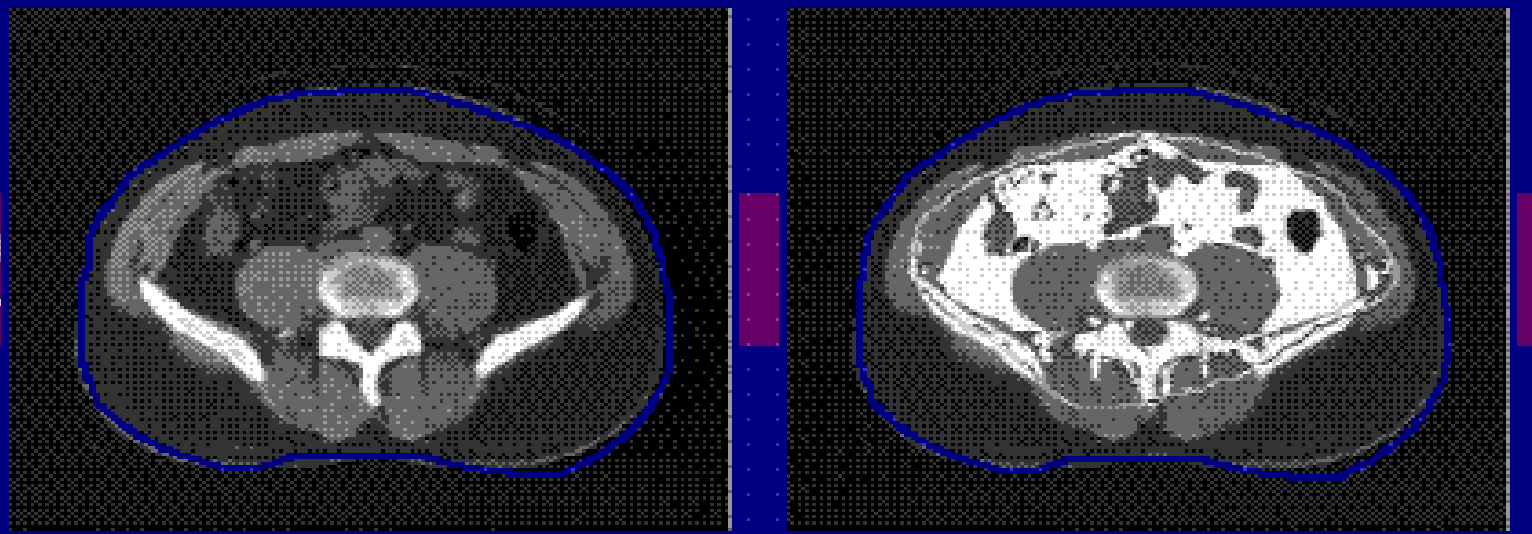
Fat mass : 19.8 kg
Internal fat : 155 c

APPLE

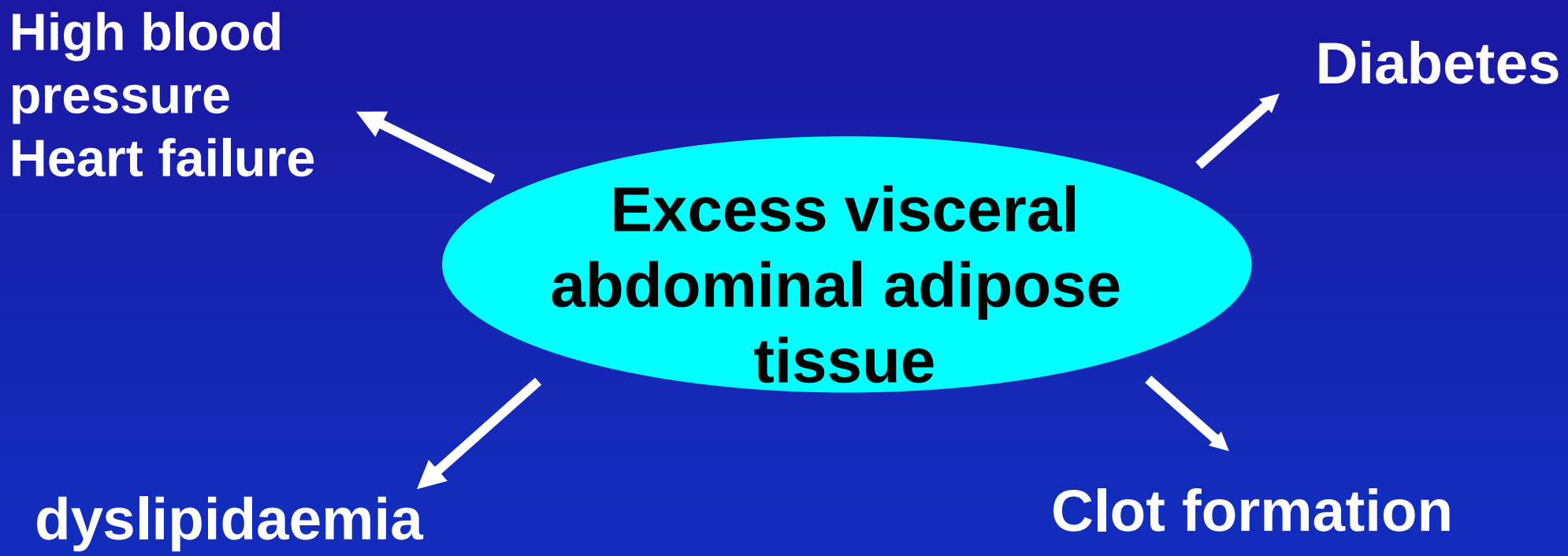


Fat mass : 19.8 kg
Internal fat : 96 cm

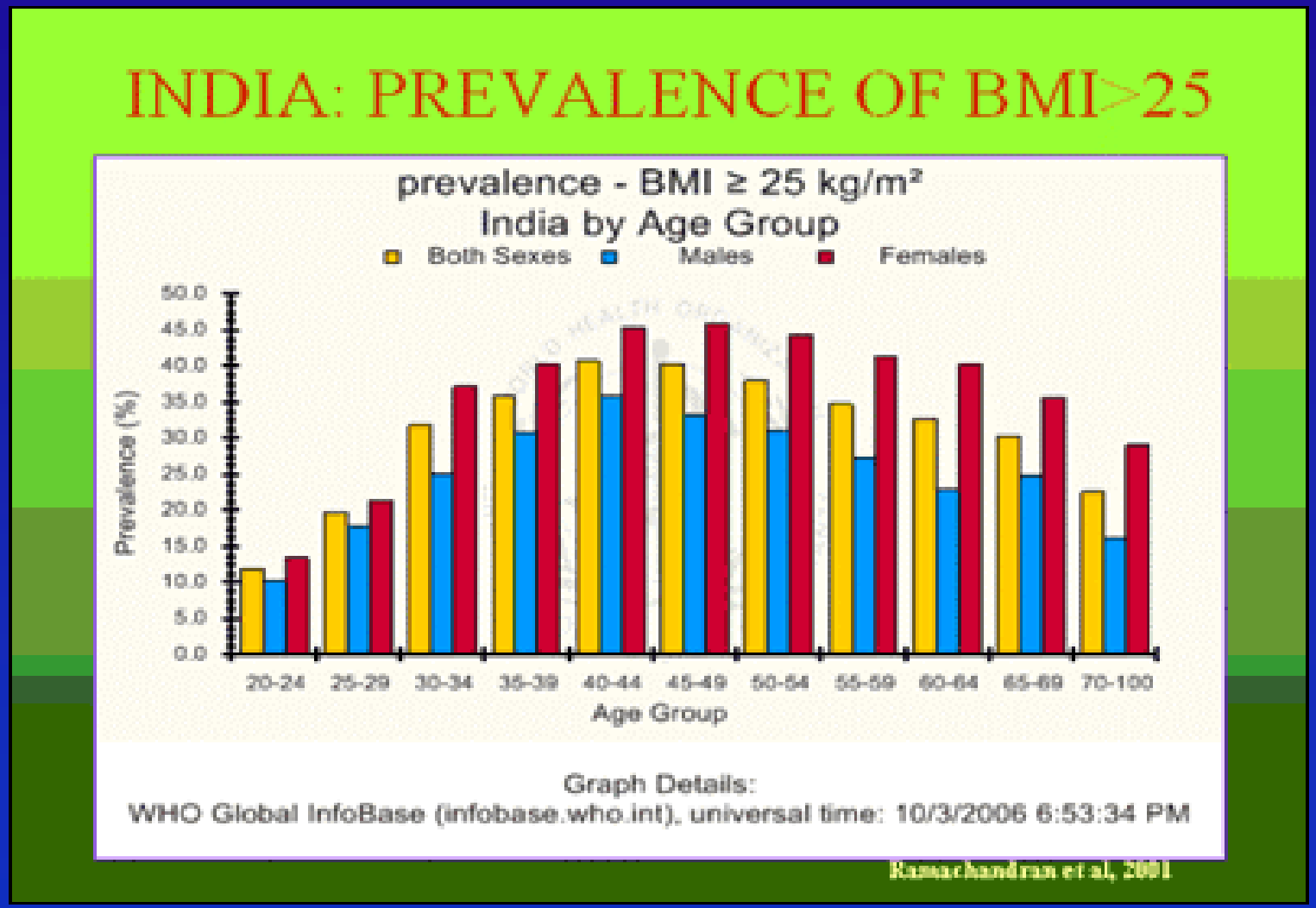
PEAR



Internal fat and the Syndrome X

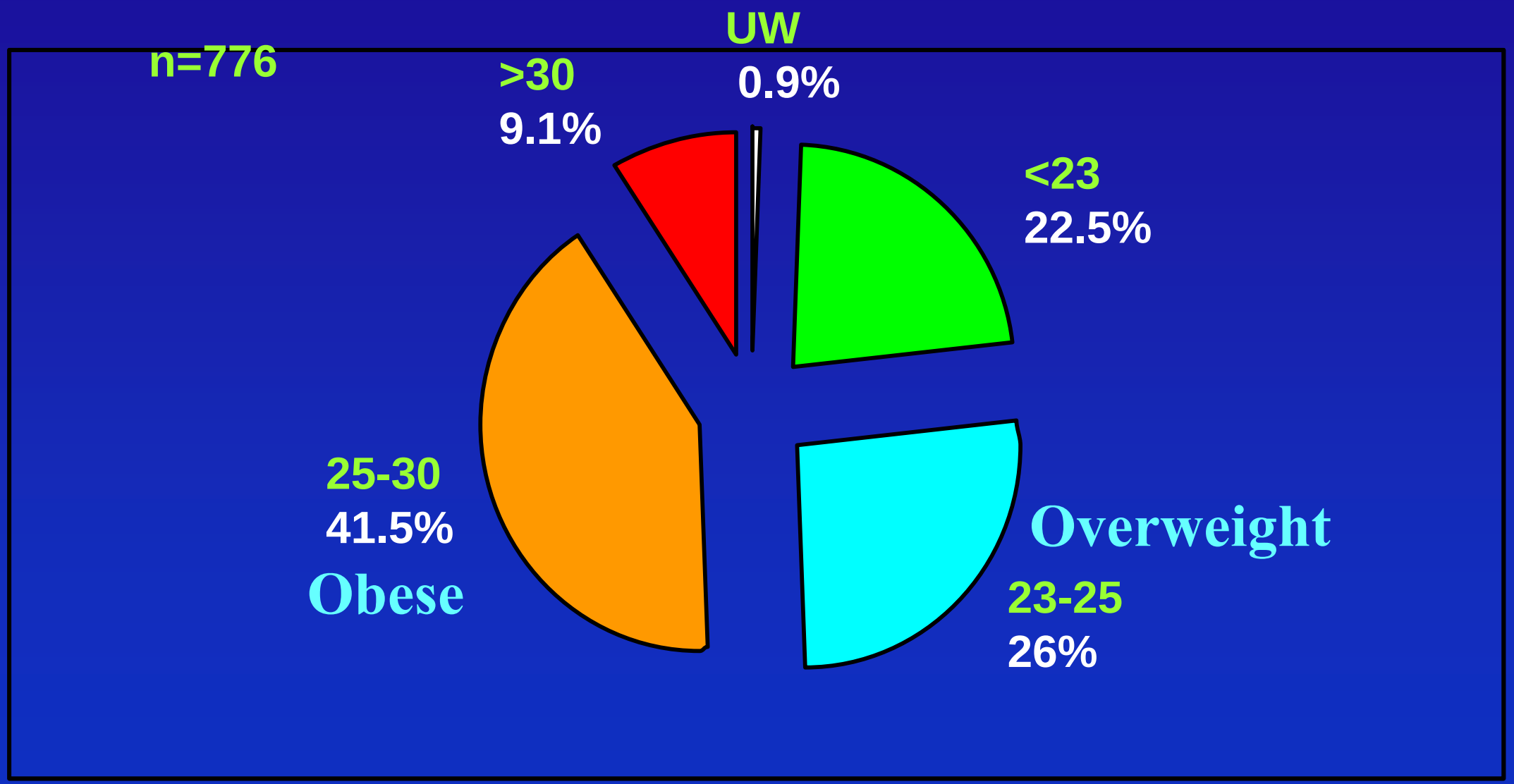


Obesity in India: the weight of the nation



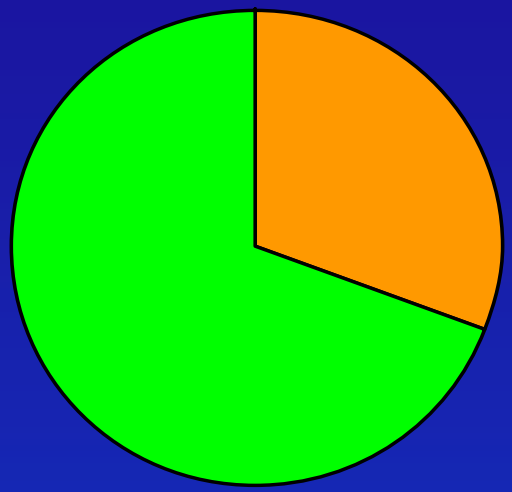
35 to 45 percent of middle-aged Indians have a BMI >25

Distribution of BMI in Emp RSTPS

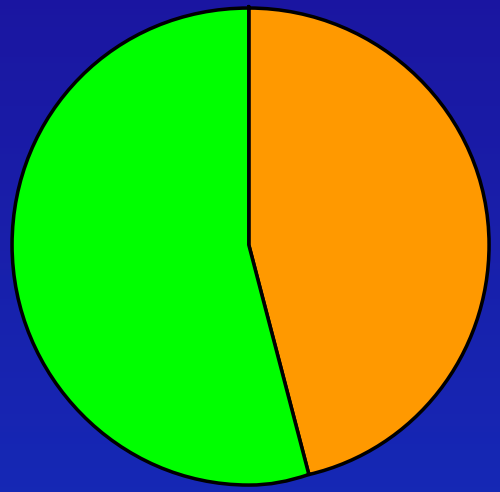


Prevelence of obesity related diseases Emp RSTPS

30.9% DIABETES

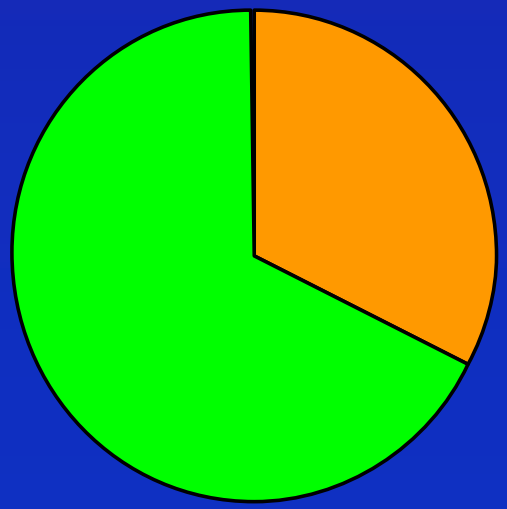


45.8% HYPERTENSION

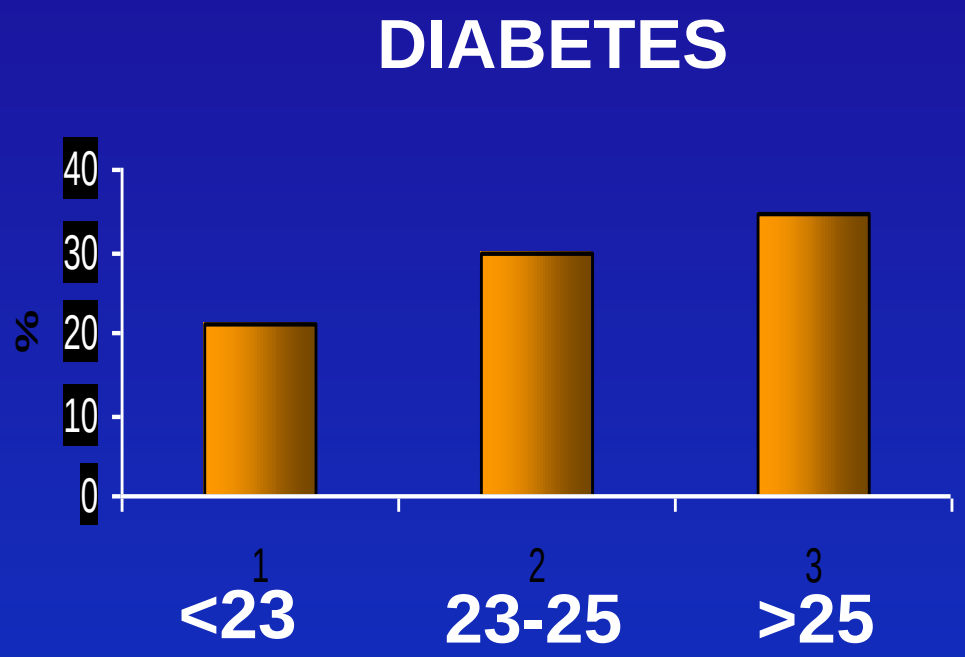


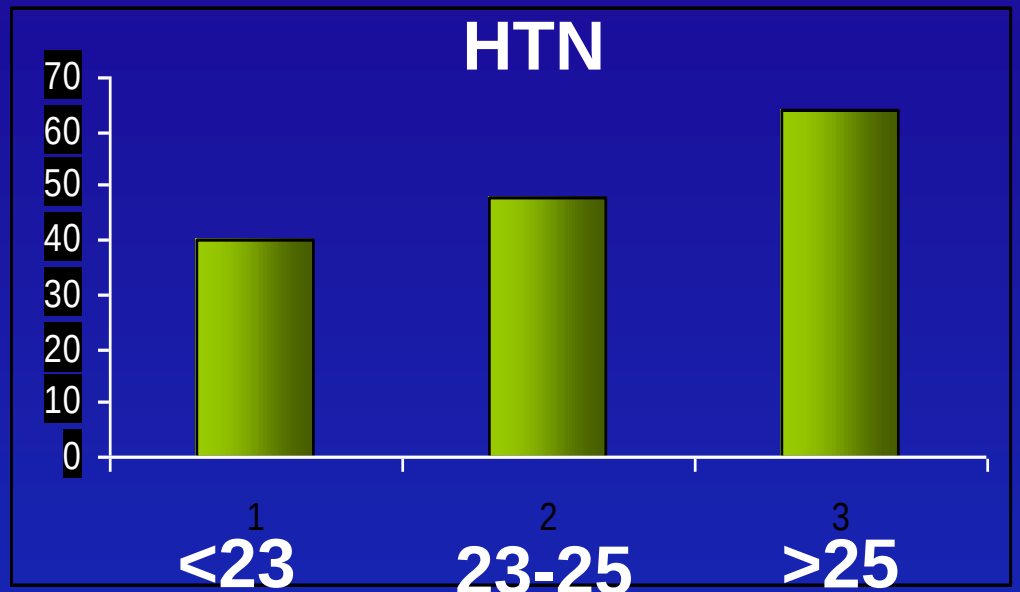
n=776

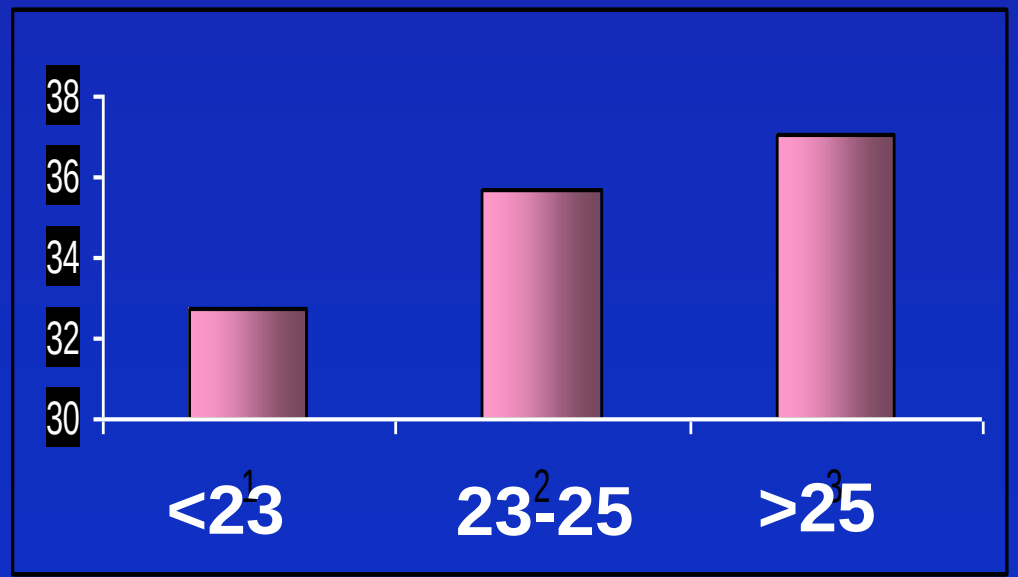
32.6% CHOLESTEROL



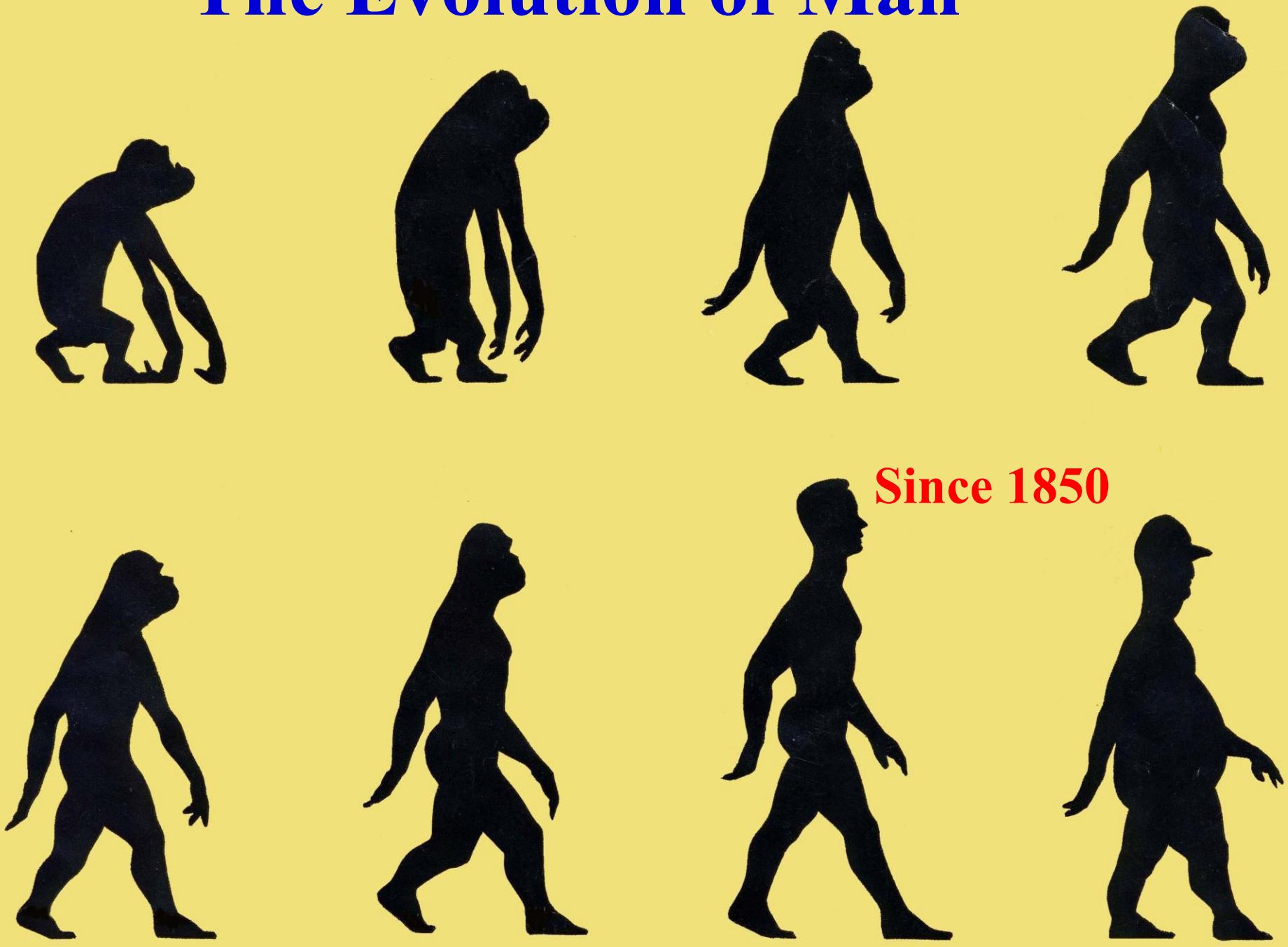
Correlation of NCDs with BMI: RSTPS employees





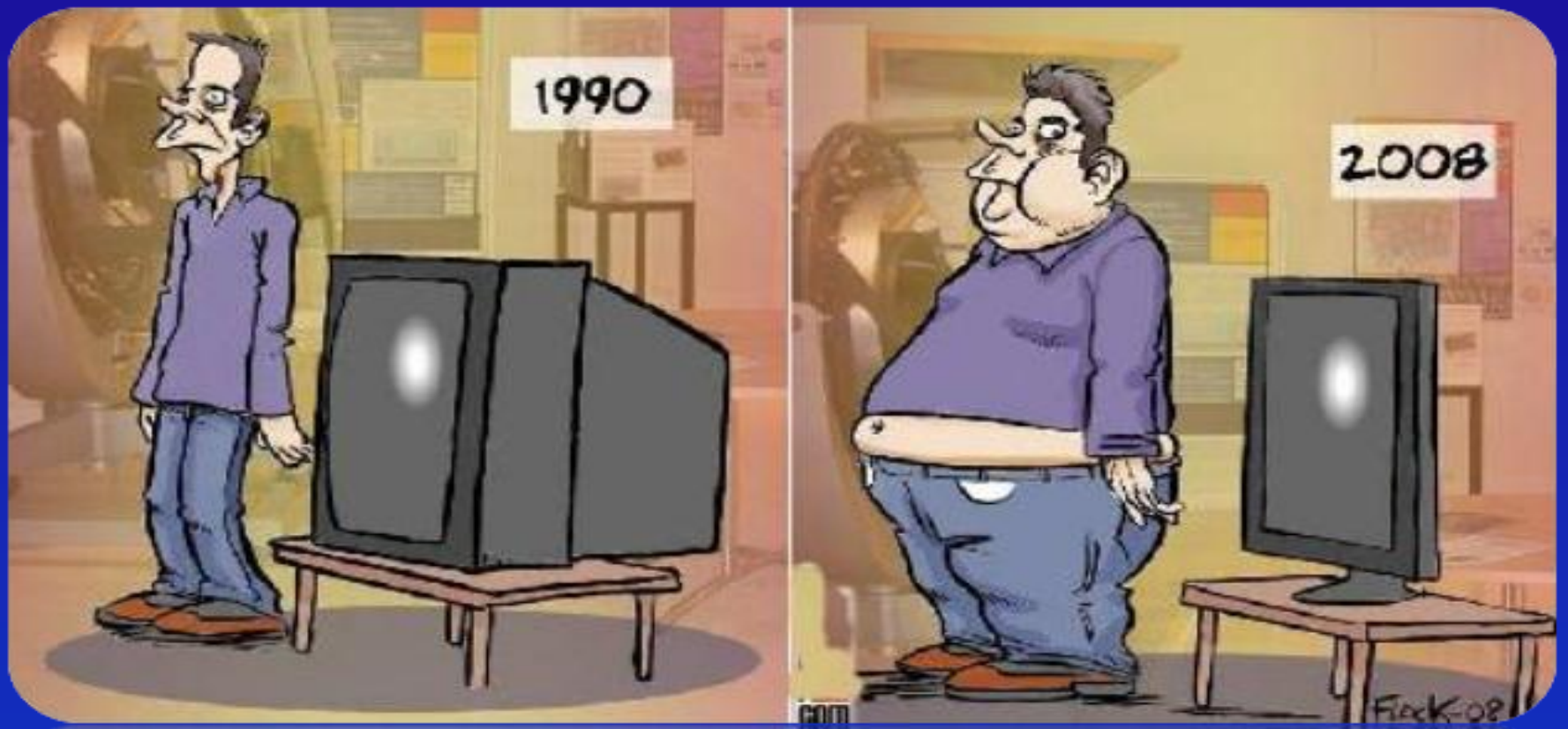


The Evolution of Man



Technological advances and decreased activity

- Fewer active jobs
- Motorised transport
- Energy-saving devices
- Attractive and cheap home screen entertainment



CHALLENGE IS TO COUNTERACT THESE EFFECTS

WHO Obesity Guidelines, 2000
Technical Report Series 894

Physical activity level PAL = 1.0

Resting Metabolic Rate (RMR) = 1Kcal/Kg/Hr

50 kg body weight = 50 x 24 = 1200 Kcal/day

70 kg body weight = 70 x 24 = 1680 Kcal/day

Physical Activity Level - PAL
Multiple of Resting Metabolic Rate

	MEN	WOMEN
RMR	1.00	1.00
Very Light	<1.46	<1.41
Light	1.46 - 1.65	1.41 - 1.55
Moderate	1.66 - 1.90	1.56 - 1.75
Heavy	1.91 - 2.25	1.76 - 2.05
Exceptional	>2.25	>2.05

WHO Obesity Guidelines, 2000 - Technical Report Series 894

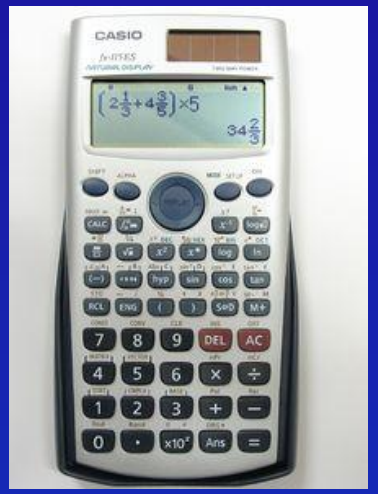
Physical Activity and Obesity

- Risk of obesity increases multifold with PAL ≤ 1.75

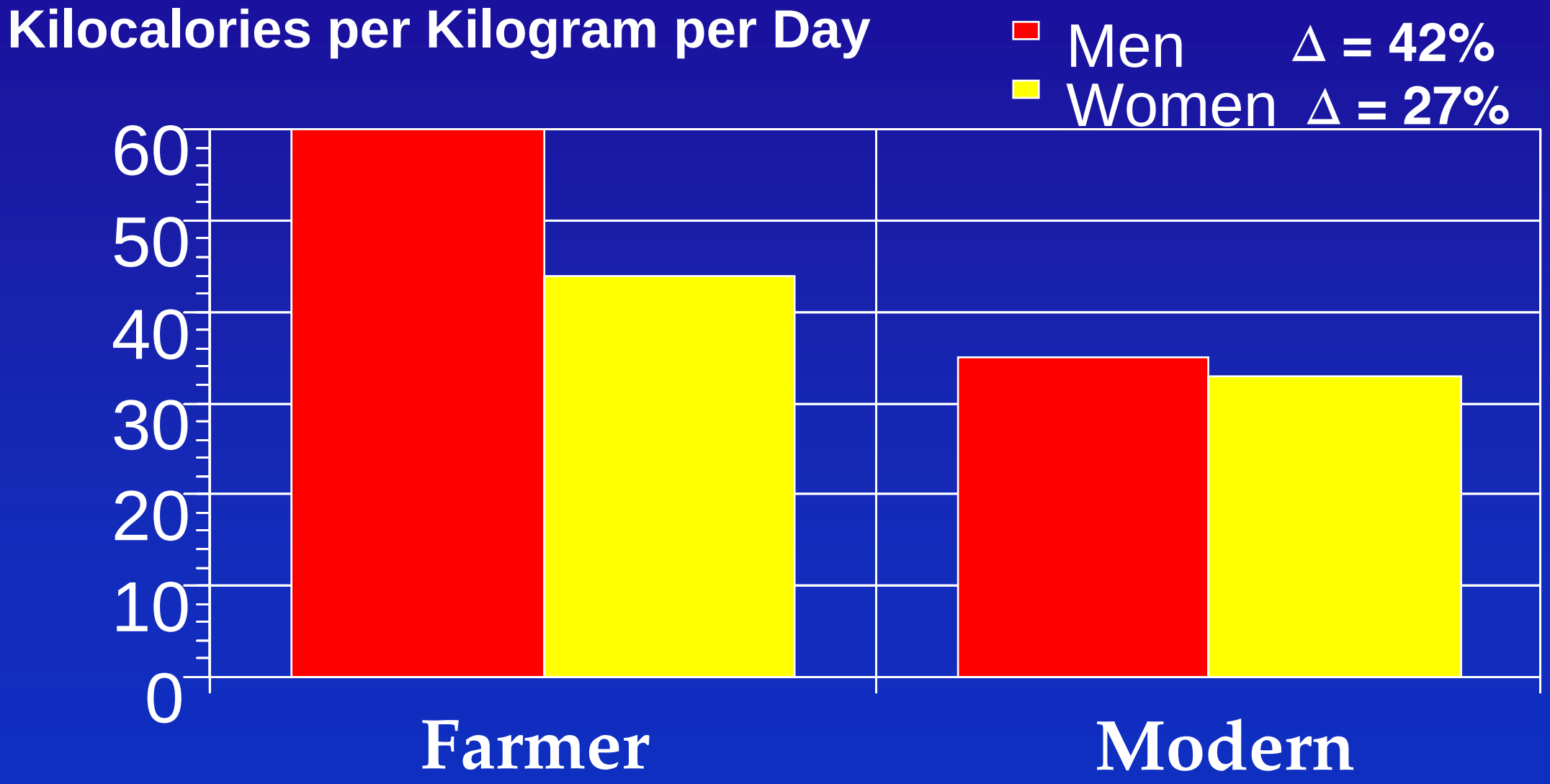
- Prevalence of PAL ≤ 1.75 rapidly increasing in developed and developing countries

WHO Obesity Guidelines, 2000 - Technical Report Series 894

Gadgeted Officer!!!!

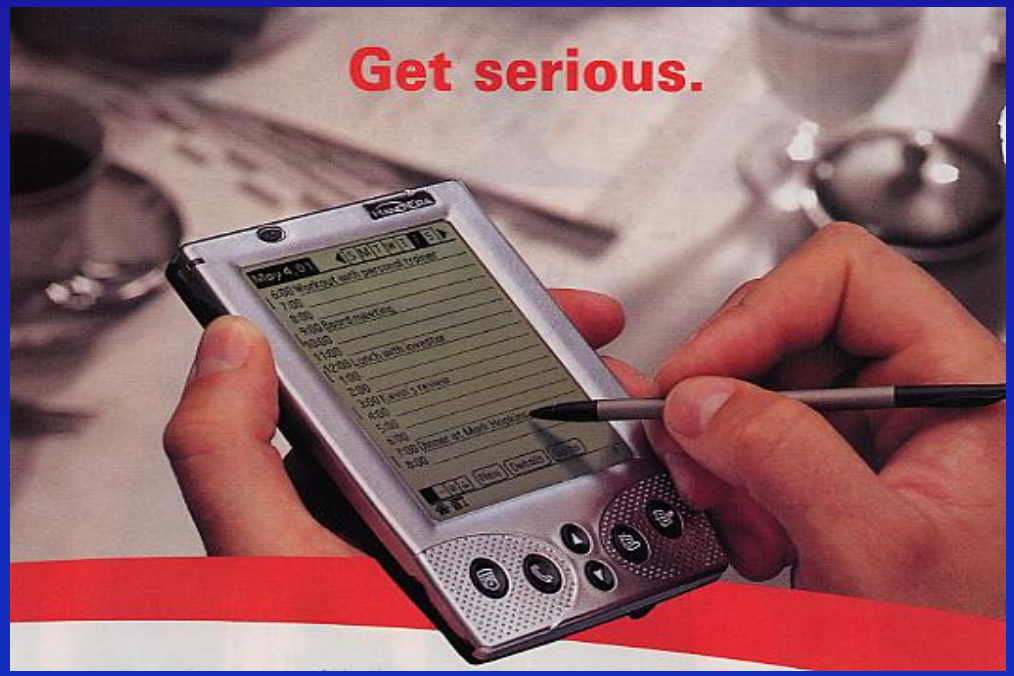


Daily Energy Expenditure in farmers vs sedentary adult



Montgomery E., Fed Proceed 37:61-64, 1998

Continued decrease in physical activity



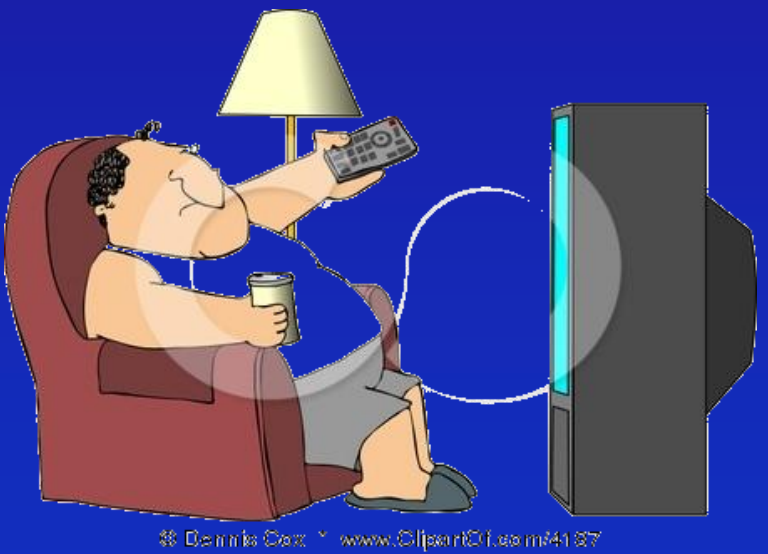
- Reduce commuting to work
- Computer to bank, shop, etc.
- More job tasks automated
- New technologies

Variations in Energy Expenditure Due to Daily Physical Activity

* Kcal/day for 70 kg person

High-Tech increases Body Weight

Cellular phones and remote controls deprive us from walking!



20 times daily x 20 m = 400 m

Walking distance lost/year
400x365 = 146,000 m

146 km = 25 h of walking

1 h of walking = 113-226 kcal

Energy saved =2800-6000 kcal

➔ 0.4-0.8 kg adipose tissue

Rössner, 2002

Technology and Leisure Activity

Potential reduction of leisure-time physical activity

Computers

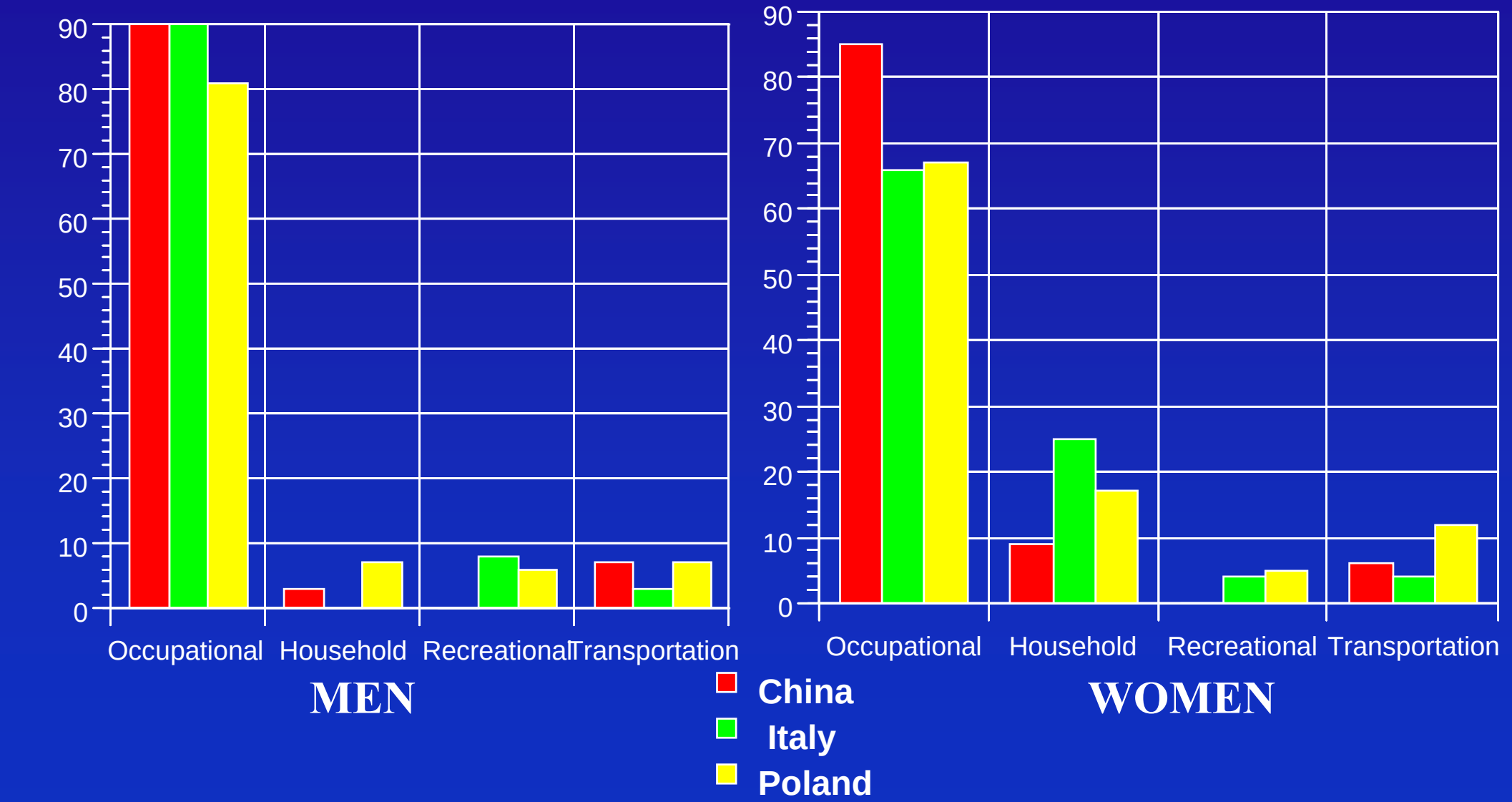
Games

Communication for recreation- Chat rooms

Home based videos- access on the net

Television

% Time Spent by Adults in Different Categories of Physical Activity

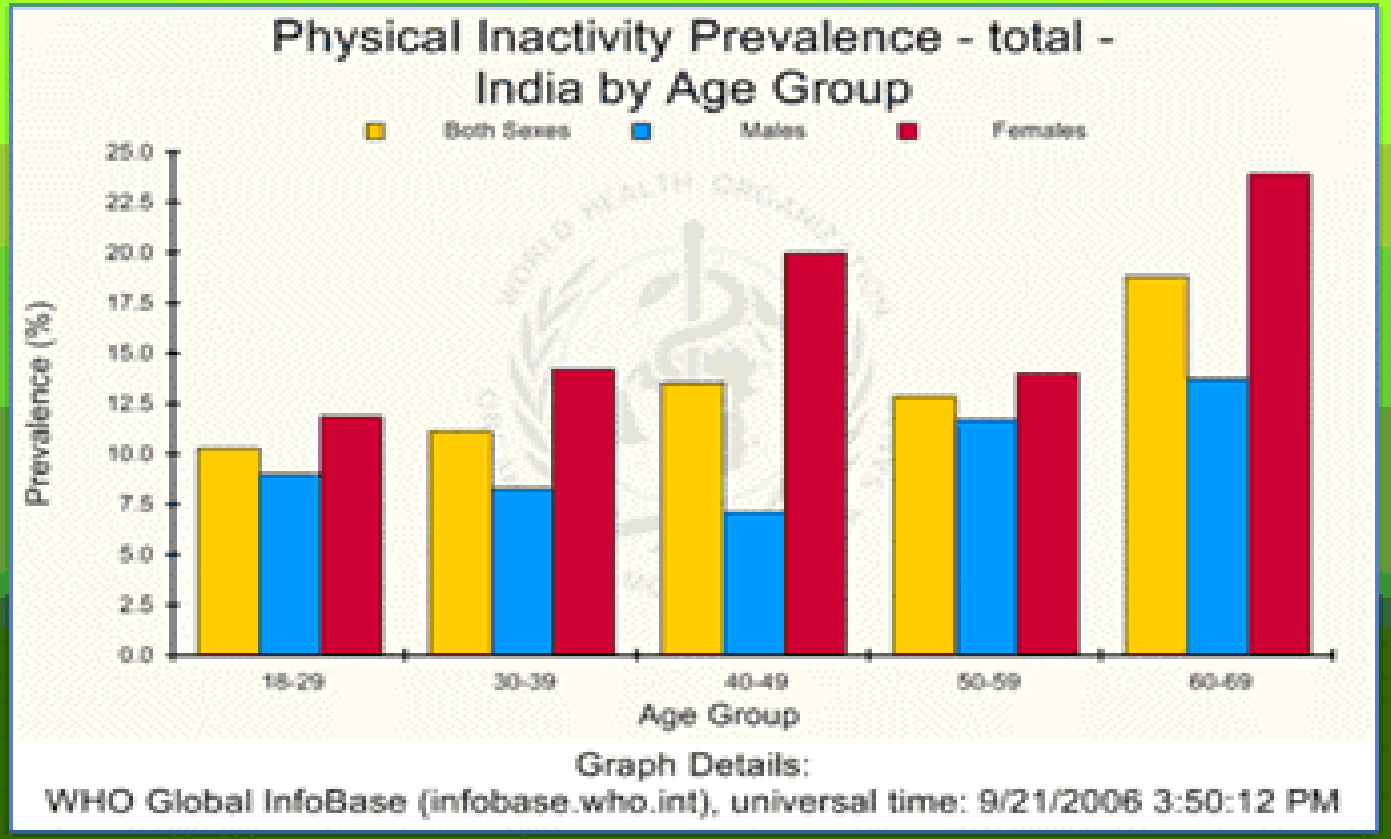


Data from WHO MONICA report, 2000

We the inactive indians

PHYSICAL INACTIVITY IN INDIA

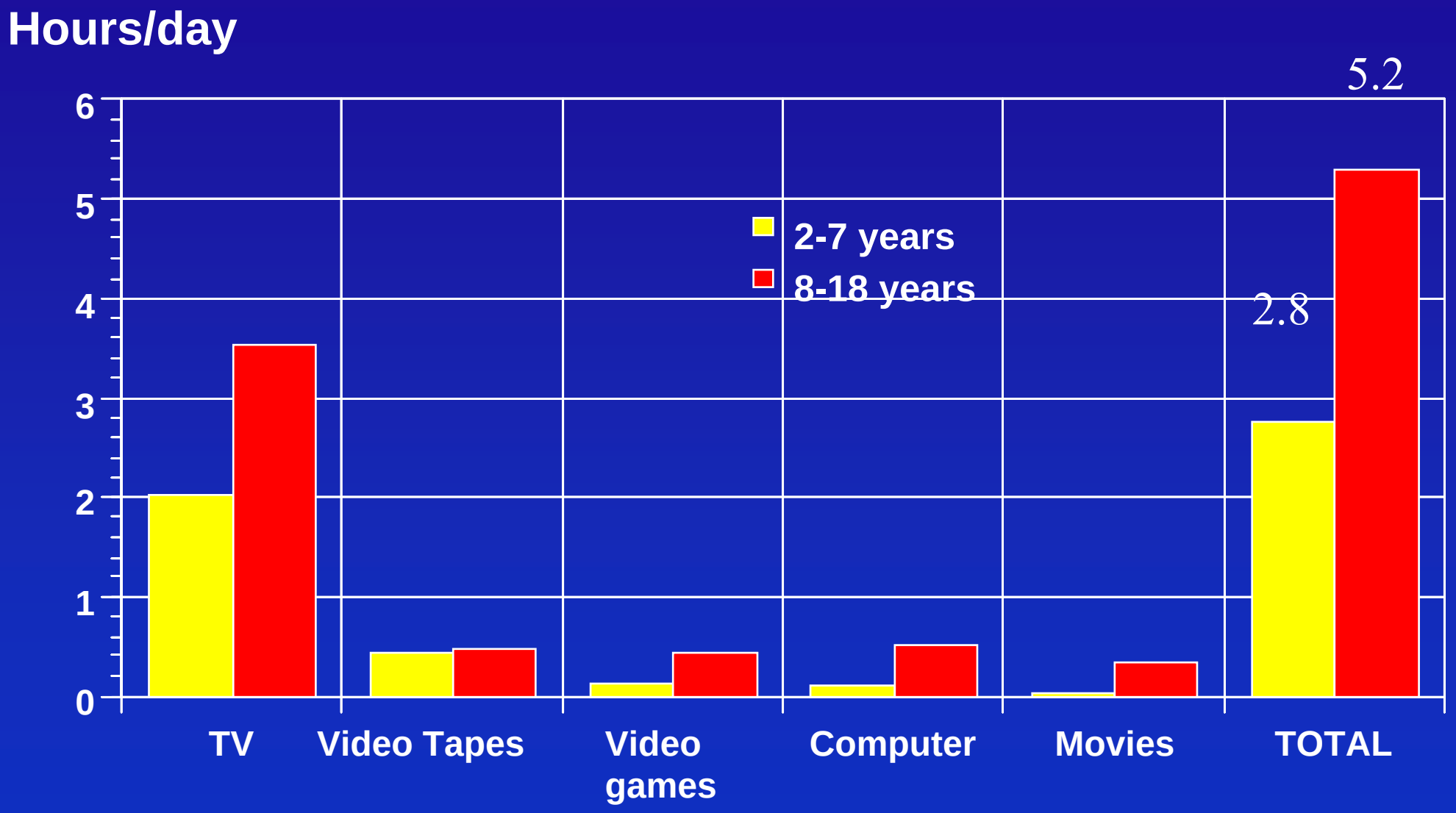
WHO 2003b



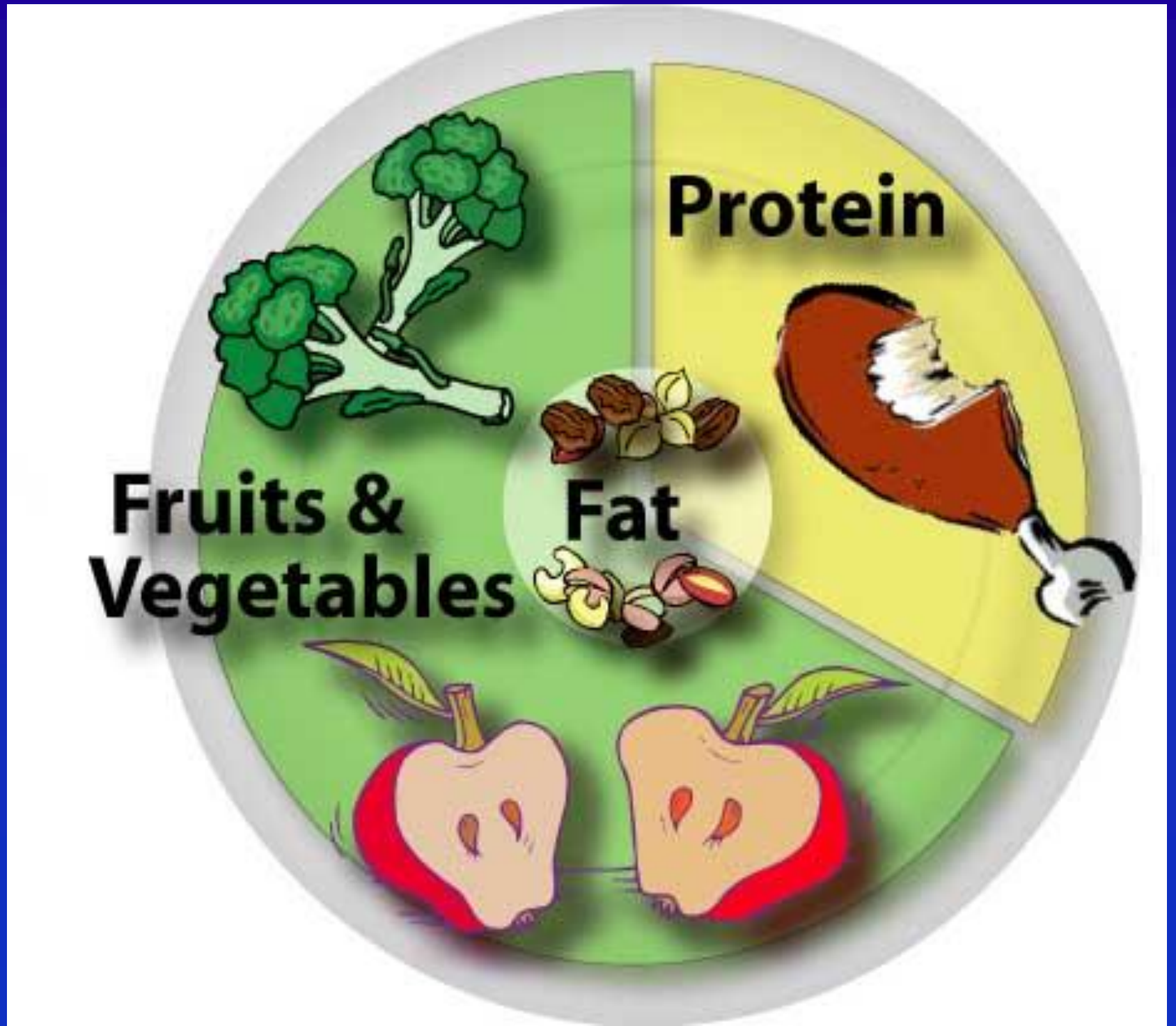
High prevalence of physical inactivity, especially among middle-aged and older adults

Time Spent by Children Viewing Electronic Media

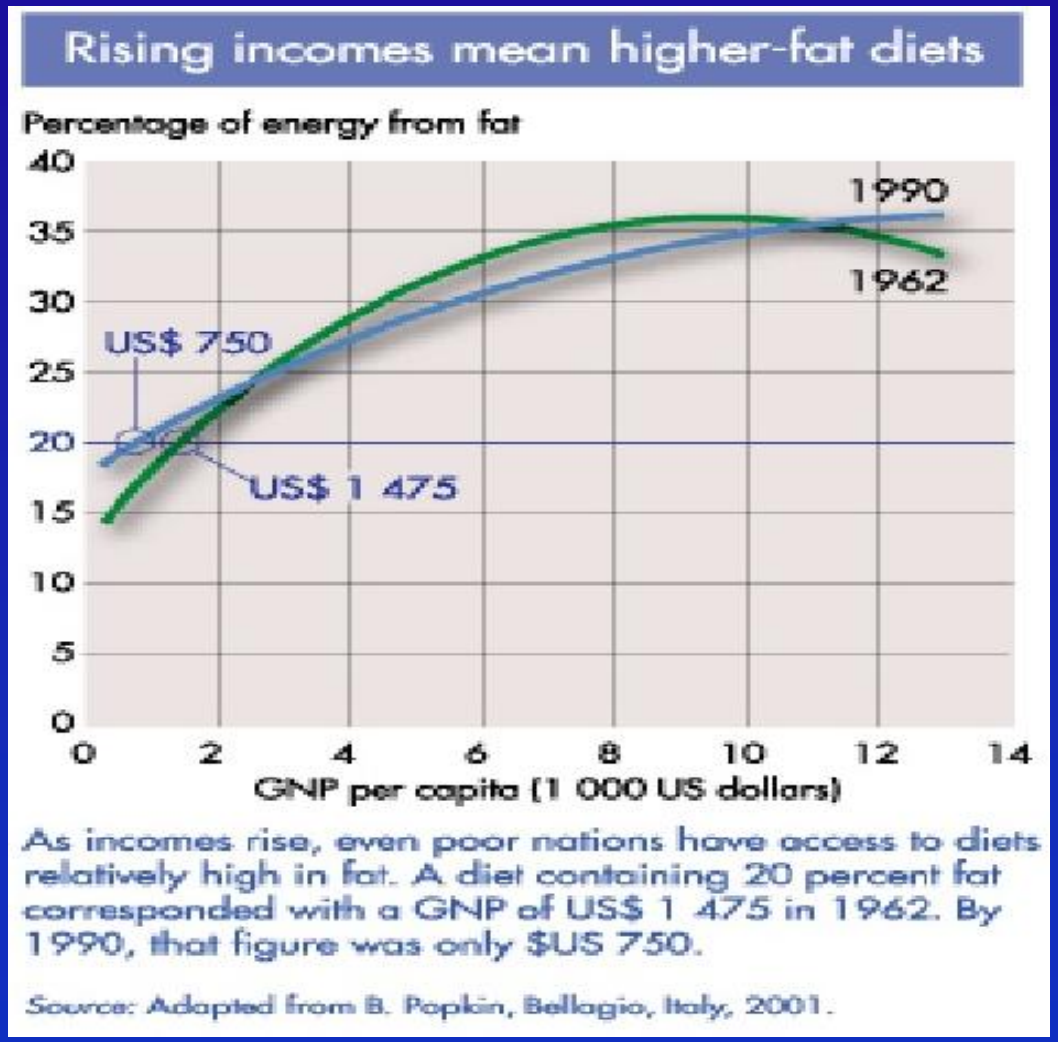
"The Media Generation"



Kids and Media. A Kaiser Family Foundation Report, November 1999


Protein
Fruits &
Vegetables
Fat

Fat purse= Fatty diet!!!



As the per capita income rises, the per capita fat consumption also increases

Average daily per capita dietary intake of Fat in India

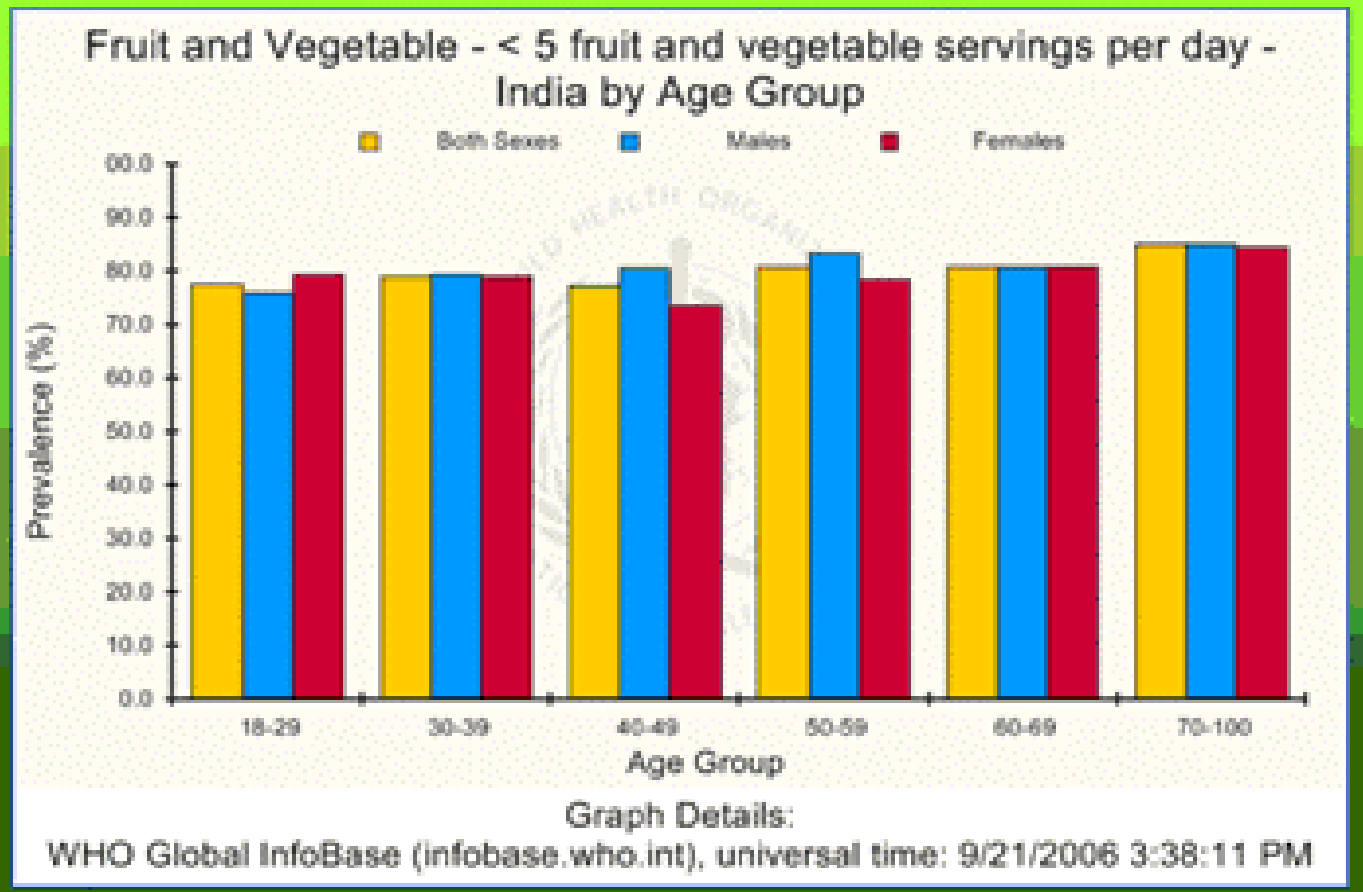
Year	Fat (g) Rural	Fat(g) Urban
1972-73	24	36
1983	27	37
1993-94	31.4	42
1999-2000	**36.1**	**49.6**

Source: NSSO 2001

Un- Healthy eating habits

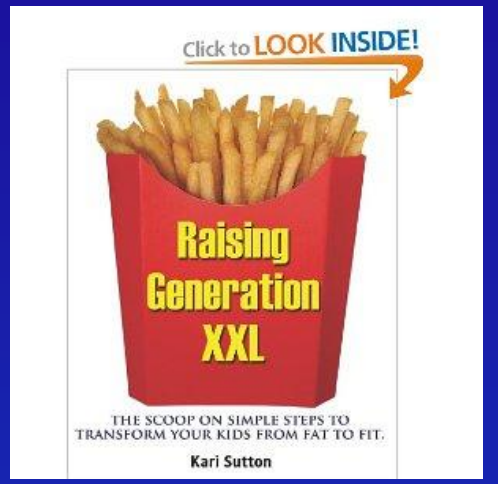
FRUIT & VEGETABLE INTAKE IN INDIA

WHO, 2003a



Nearly 80 % consume less than 5 servings/day

High Caloric Density Food Always Available at Low Cost

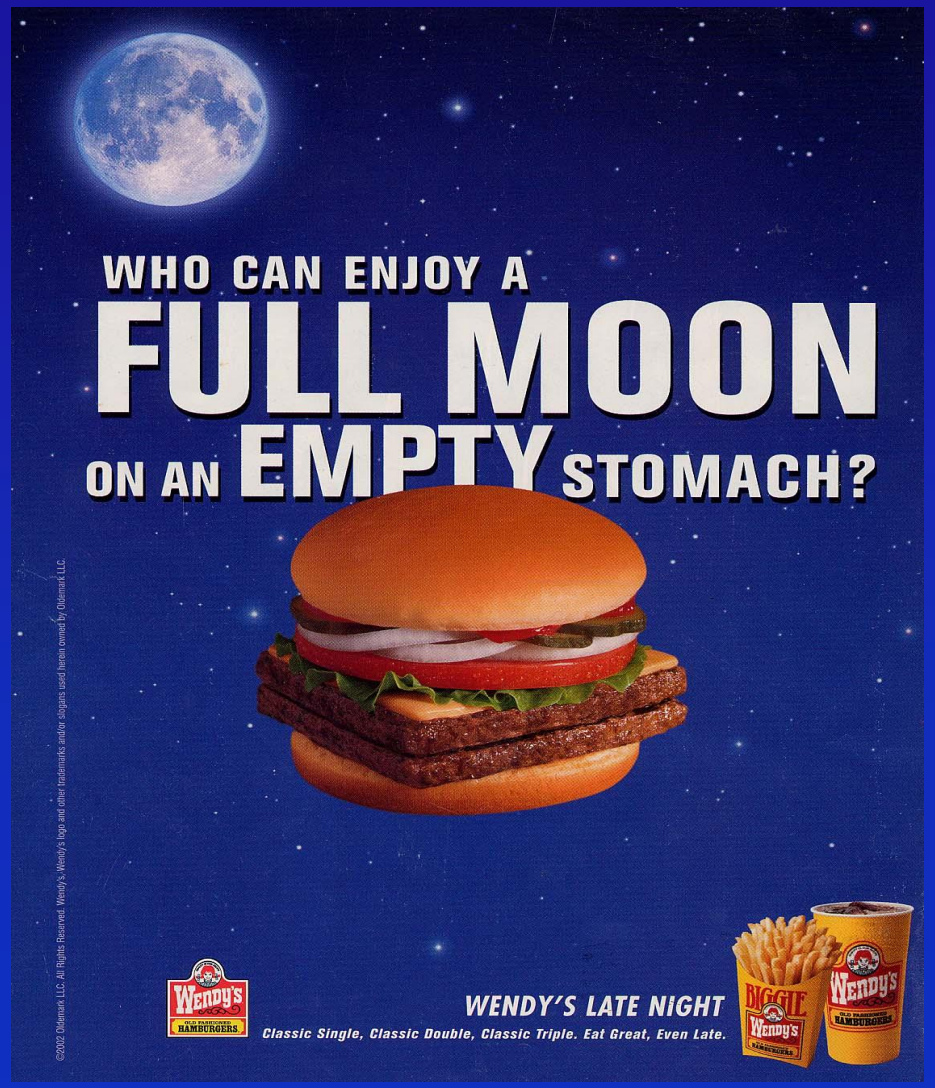


CALORIES

Double Cheese Burger = 690
Super Size Coke = 280
Biggie Fries = 570
TOTAL = 1,540

62 grams of fat

Ad in Sports Illustrated 15/06/09



"EAT TO LIVE"

Intake = Expenditure

Weight Stable

"LIVE TO EAT"

Intake > Expenditure

Obese

Spectrum of obesity management

THE MANAGEMENT OF OBESITY: AN INTEGRATED APPROACH

- Integrate different therapeutic approaches
- Individual patient needs including
  - Dietary management
  - Physical activity
  - Drug therapy
  - Surgery

CONTRASTING PATIENT AND PHYSICIAN EXPECTATIONS

Expectation	Patient	Physician
Rate of weight loss	Rapid	Gradual
Weight loss (% of initial weight)	20%	5-10% (15%)
Time on diet	Some weeks	Rest of life
Goals	Weight loss Cosmetic purposes Physical fitness	Weight maintenance To decrease obesity co-morbidities Metabolic fitness

Reference: Ziegler O, Meyer L, Guerci B et al. *In press*.

Weight loss has beneficial health effects

Weight loss of about 5% in obese individuals with co-morbidities DM, HTN and high cholesterol

- Improved sugar control
- Reduced blood pressure
- Improved lipid profile

Goldstein DJ. Int J Obesity, 1991


DIET

Fat as the Macronutrient Culprit

	Protein	Carbohydrate	Fat
Energy content per g	4	4	**9**
Ability to end eating	High	Moderate	**Low**
Ability to suppress hunger	High	High	**Low**
Storage capacity	Low	Low	**High**
Pathway to transfer excess to alternative compartment	Yes	Yes	**No**
Ability to stimulate own oxidation	Excellent	Excellent	**Poor**

Adapted from WHO Consultation 1998

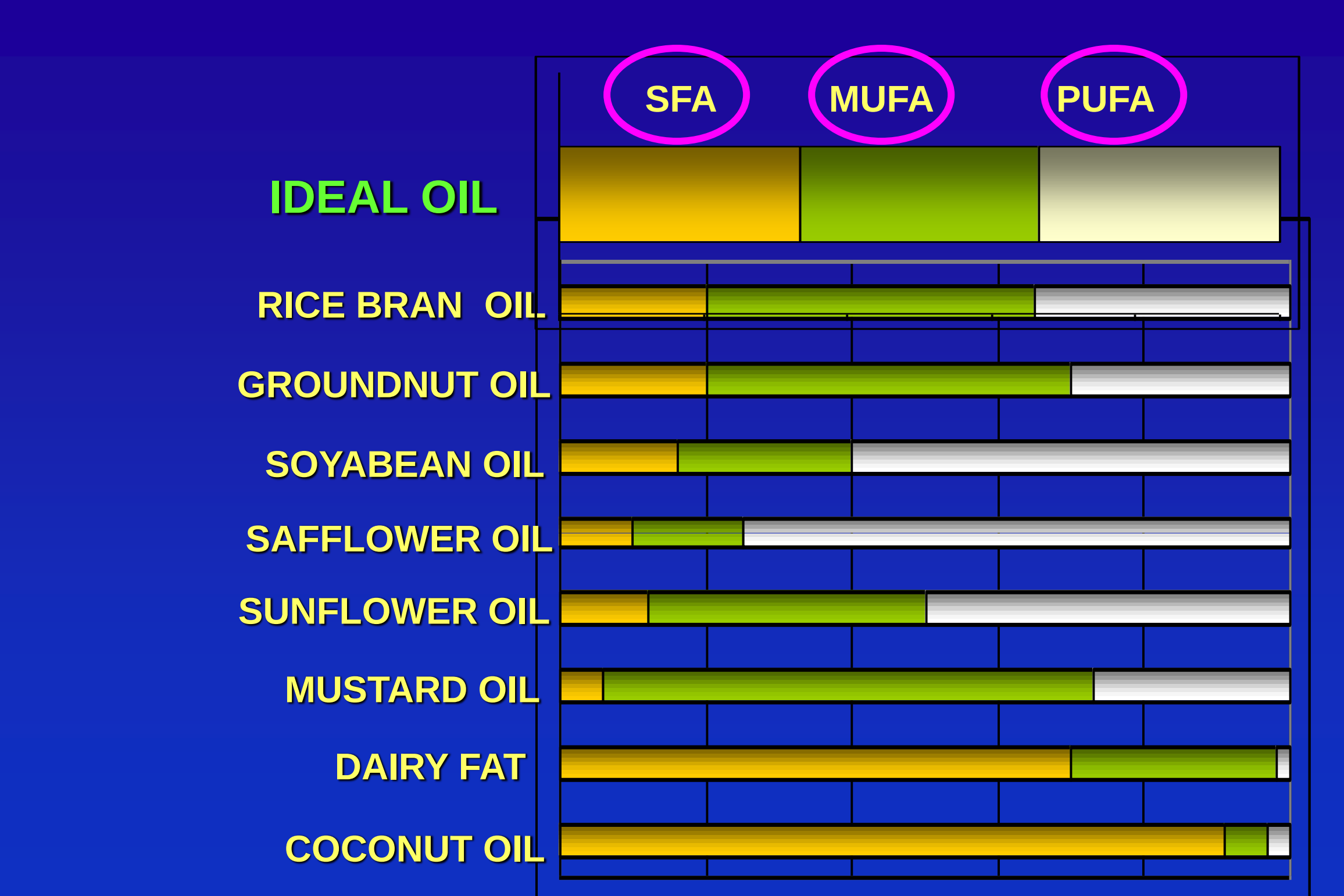
- Cooking oils (liquid) solid fats

- contribute to texture, flavour and taste
- increase the palatability of the diet
- promote the absorption of the four fat-soluble vitamins (A,D,E and K)

VISIBLE AND INVISIBLE FAT

How much visible fat do we need ?

- Sedentary < 25g/person/day
- Hard physical work- 30-40g/person/day


SFA
MUFA
PUFA
IDEAL OIL
RICE BRAN OIL
GROUNDNUT OIL
SOYABEAN OIL
SAFFLOWER OIL
SUNFLOWER OIL
MUSTARD OIL
DAIRY FAT
COCONUT OIL

Few Available Combinations

Blends of ricebran and sunflower oils

Two or more different kinds of oils can be used in your kitchen.

For example

olive oil for salads,

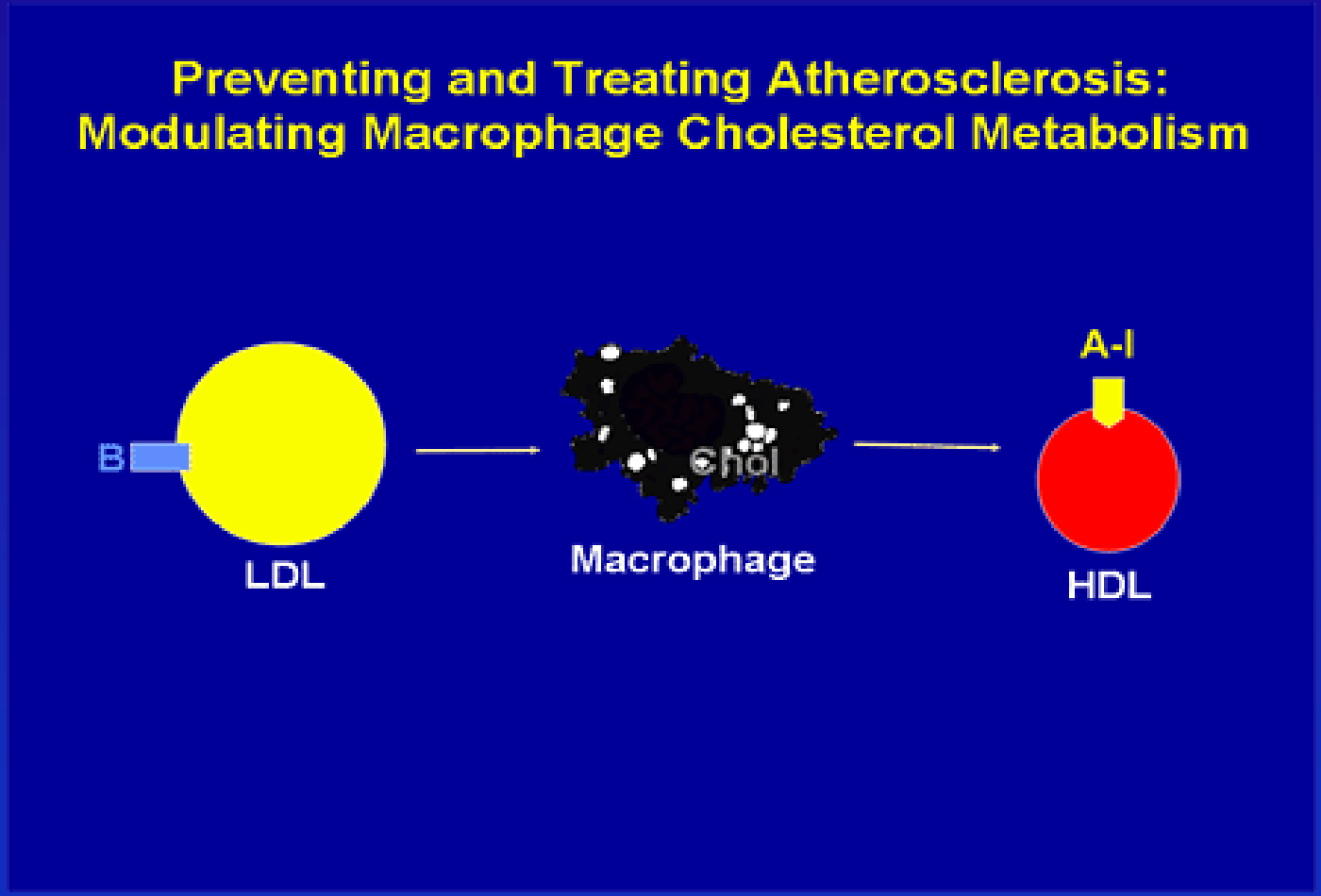
groundnut oil for frying and

soyabean oil for other cooking purposes.


HDL
LDL

Good cholesterol

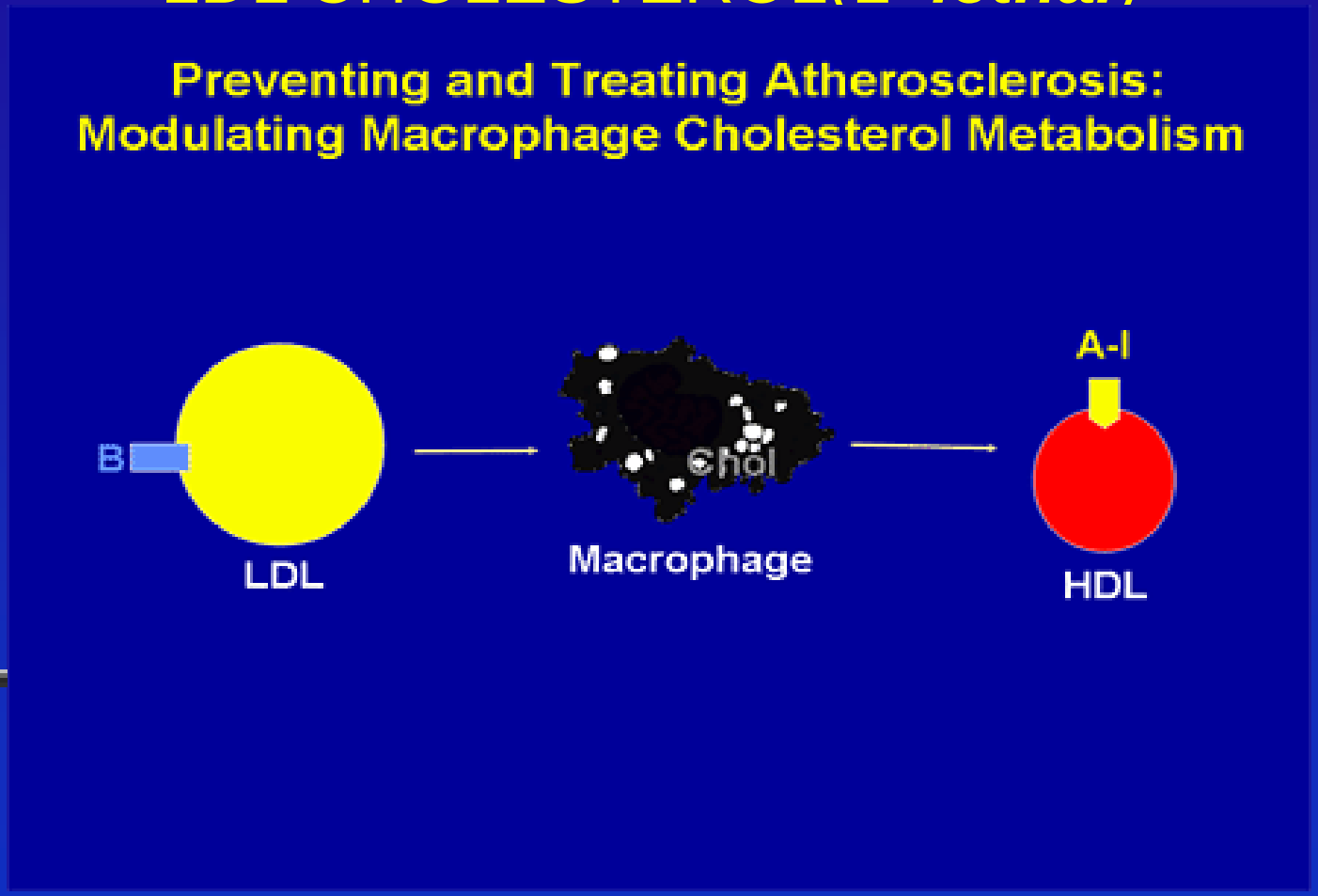
HDL CHOLESTEROL(H=*Healthy*)



” HDL can pick up the soft, waxy cholesterol deposited on arteries and deliver it to the liver for disposal in bile.

Bad cholesterol

LDL CHOLESTEROL(L=***lethal***)

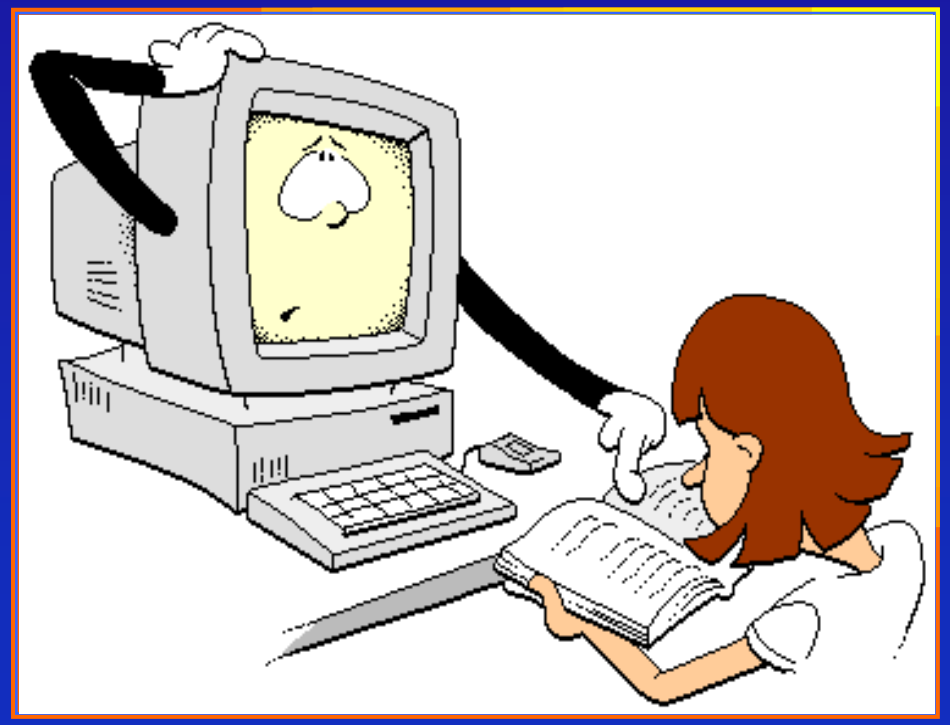


TRANSPORTS CHOLESTEROL INTO BLOOD

Physical Activity

I can change a pumpkin into a carriage,
But if you want to increase your good
Cholesterol-GO AND EXERCISE

Physical Activity



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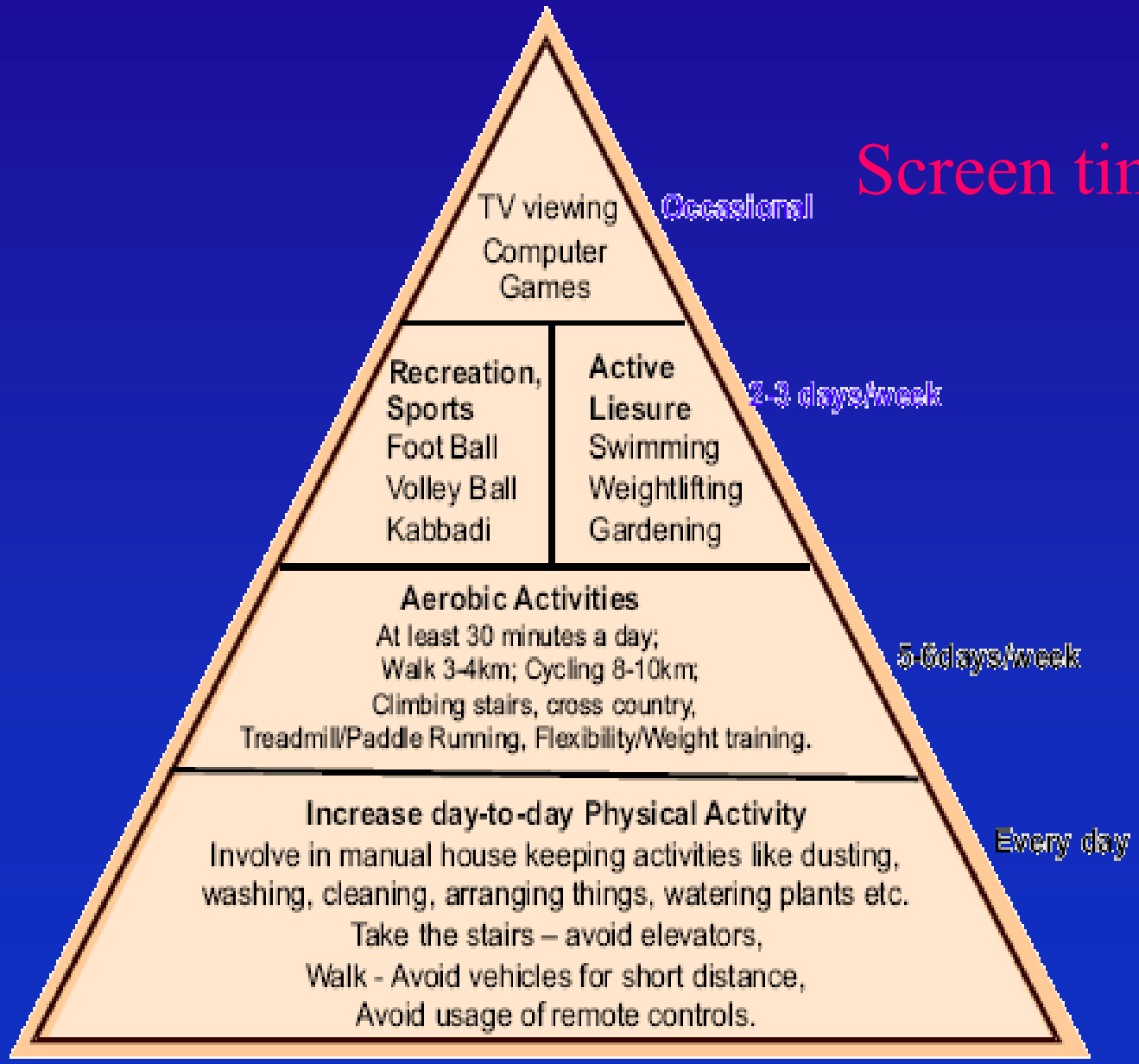
Can physical activity prevent weight gain?

GENERAL PHYSICAL ACTIVITY PYRAMID



Screen time < 1-2 Hrs

Practical
Sustainable

Frequent Increases in small activities

Small drops make an ocean !!!!

Alters Energy Balance Over 5 years

If 50 kg person ‘softy’ or a ‘techie’ exchanges sitting at computer for walking in the office

5 minutes per hour
8 hours per day,
5 days per week,
50 weeks per year for
5 years =
Amount of energy in 4.6 kg body fat.

Only 165 Kcal/week equal in energy to 4.6 kilograms of body fat in 5 years

Drugs and surgery- for morbid obesity

Battling the bulge!

- Hospital intranet, health awareness CDs, for increasing awareness about NCDs
- Education through AMC, Diabetic and hypertension Clinic
- Diabetic camp, mass walking for employees
- Awareness about Lifestyle modification through Programs such as Obesity awareness programs (from 24th-29th Sep 2012…all are invited!!!!)

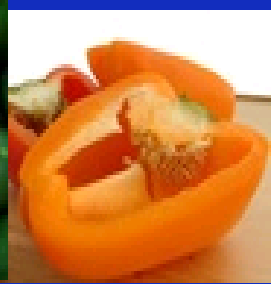
Take Home Points: Rule of Five

- Start with moderate physical activity of
  - *5 minutes* of exercise
  - *5 times* a day and
  - *5 days* a week
- Restrict Oil Intake to *500 ml* per person per month
- Reduce salt to *5 grams* per person per day
- Eat *5 different colored* foods per day
- Eat *5 servings* of fruits and vegetables per day

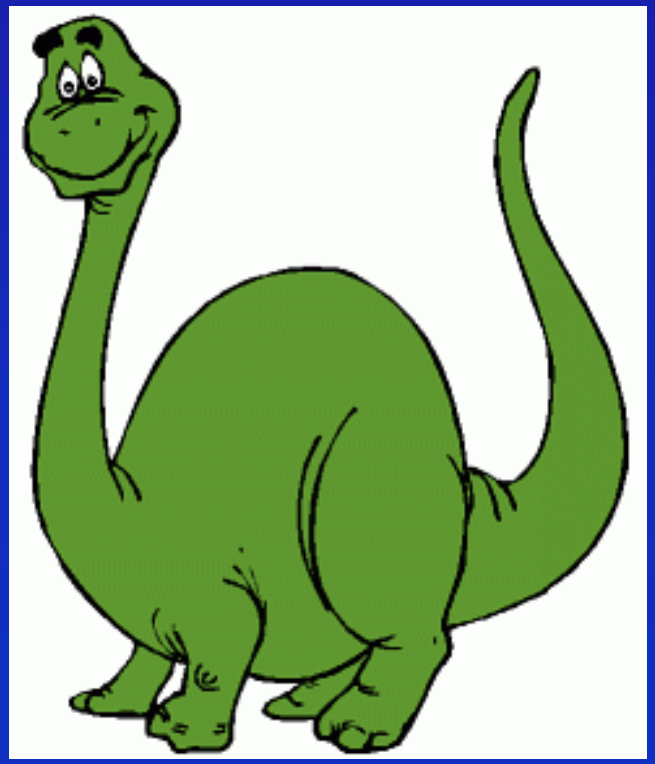








Do you think that the technology and the environment has evolved faster than our capacity to adapt?




EAT WELL
PLAY HARD
make it balance

Kachori Vs Samosa

- 190 Calories / piece

- 103 Calories / piece

Save 87 calories

Chat Vs Bhel puri

- 474 Calories / 100 gms

- 182 Calories /100 gms

Save 292 calories

Upma Vs Sada Dosa

- 397 Calories / 250 gms

- 210 Calories / 100 gms

Save 187 Calories

Rice Vs Idli

- 238 Calories / 150 gms.

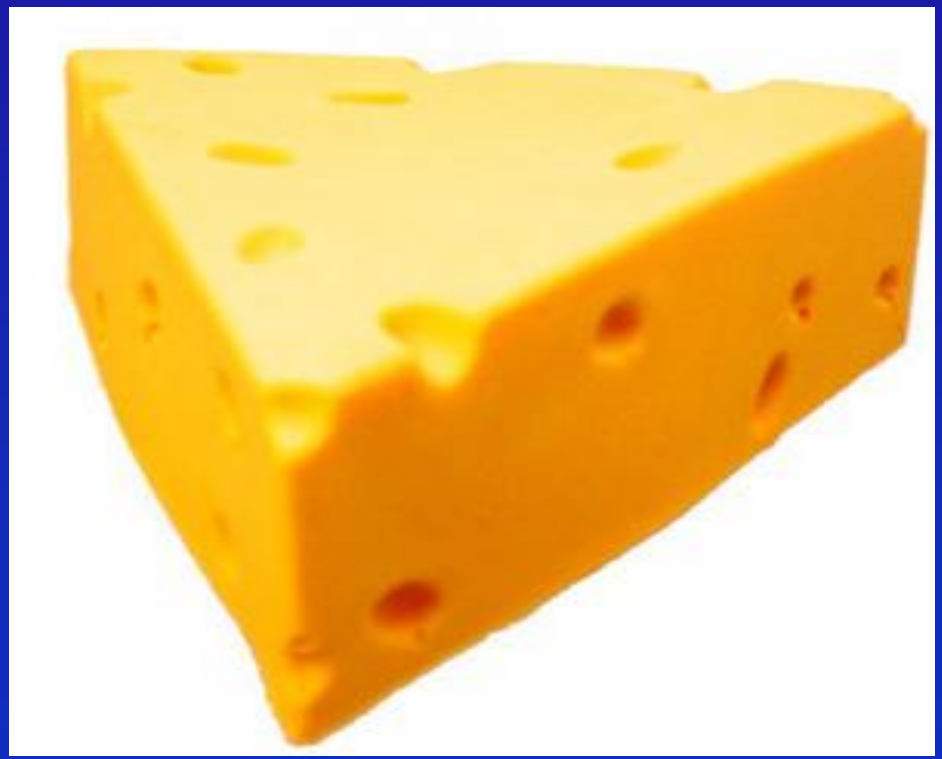
- 130 Calories – 2 Pieces

Save 108 Calories

Paneer Vs Cheese

- 345 Calories/100gms

- 27 Calories/Tsf



Save 321 Calories

Banana Vs Apple

- 132 Calories/Piece

- 56 Calories/Piece

Save 76 Calories

Egg Scrambled Vs Boiled

- 120 Calories/Piece

- 77 Calories/Piece

Save 43 Calories

Mutton Vs Chicken

- 220 Calories/Serving

- 189 Calories/Serving

Save 31 Calories

Jalebi Vs Seera

- 494 Calories/100gms

- 181 Calories/100gms

Save 313 Calories

Syndrome X

The Intricate Web of Syndrome X (Jose Ordovas)

Insulin Resistance

Hypertension

It does not matter which thread you are on - the spider will get you!

Central Obesity

Abnormal blood lipids

Syndrome X Represents the Convergence of Insulin Resistance, Hypertension, Central Obesity and Abnormal blood lipids.

Tips to reduce oil consumption

BAKING

GRILLING

USING NON STICK PANS

STEAMING