

I WILL NOT BE FAT AGAIN

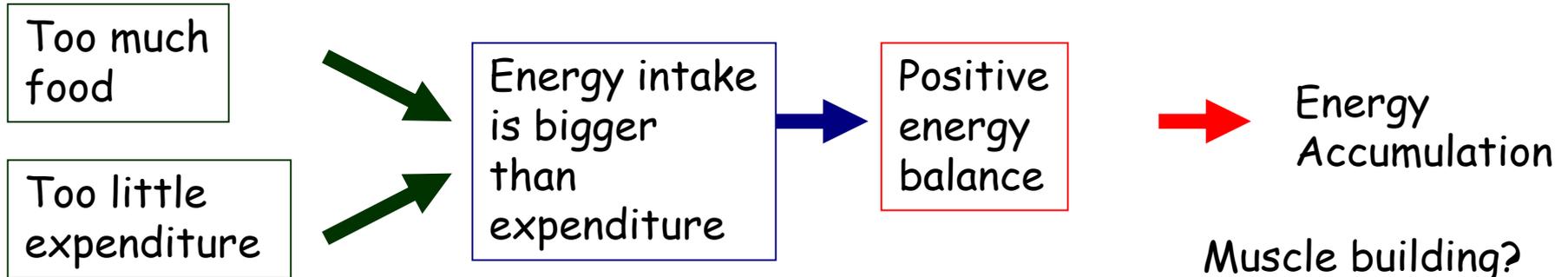
No vuelvo a engordar

# The Energy Balance

"Consuming more food (calories) than needed to maintain **energy balance** causes overweight & obesity"

[The Sugar Association](#)

# Thermodynamic Laws



Nonsense when applied to any growth in a living being



Is there a reason to talk about calories in obesity?

Muscle building?

Pregnancy?

Hair growth?

Tumor?

Growing up?

Obesity?

¿?

If your calorie intake is greater than your expenditure then you will gain weight

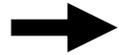
If your calorie intake is greater than your expenditure then your muscles will get bigger

If your calorie intake is greater than your expenditure then your hair will grow

If your costs are bigger than your income, you won't have benefits

# The thermostat

Our son has changed the goal temperature of the room



The room is too cold



**"More heat is lost than is generated"**



Too little heat is generated

Too much heat is lost

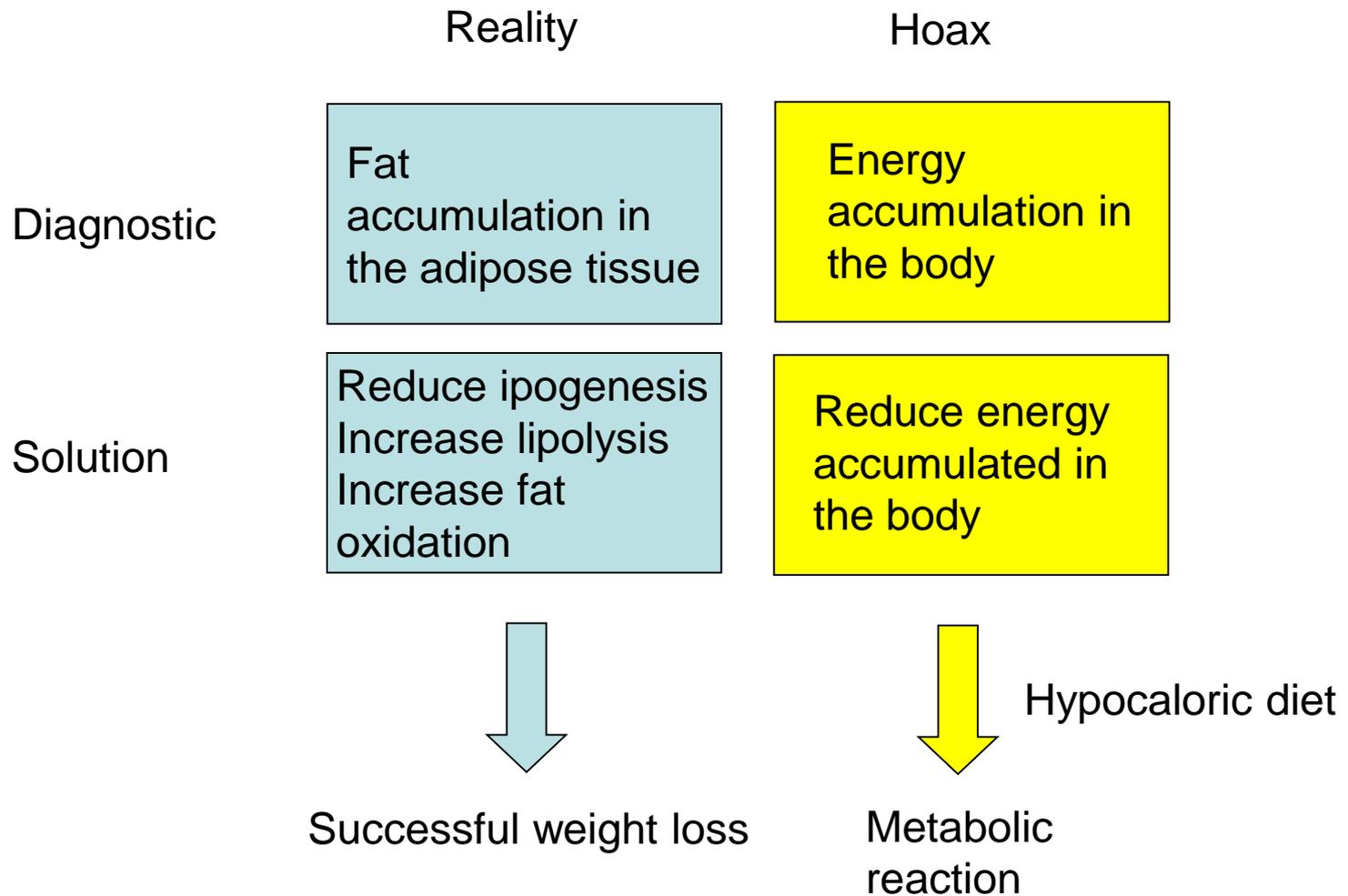
More powerful heaters

More heaters

Better heat isolation in doors and windows

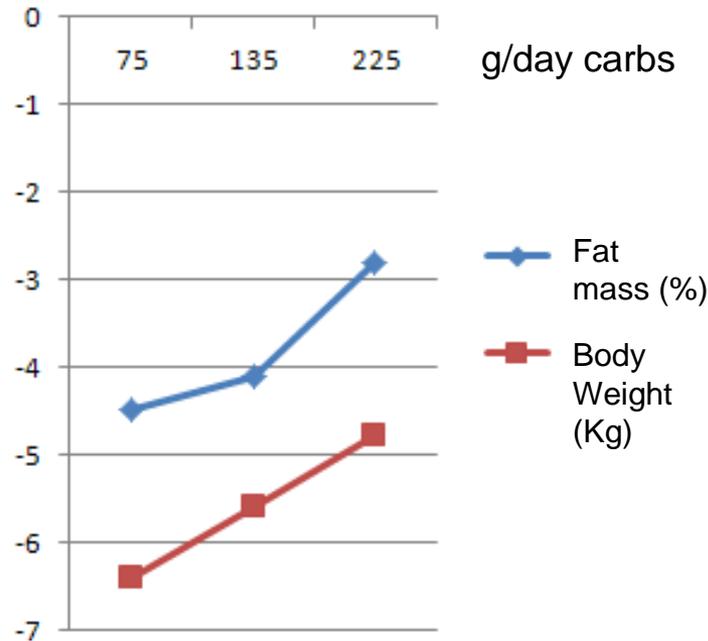
# The false problem

- Why is the Wembley Stadium full of people?
- Because more cars entered London than exited
- Therefore, emptying the stadium requires a reduction of the car traffic entering the city and/or an increase of the car traffic exiting the city

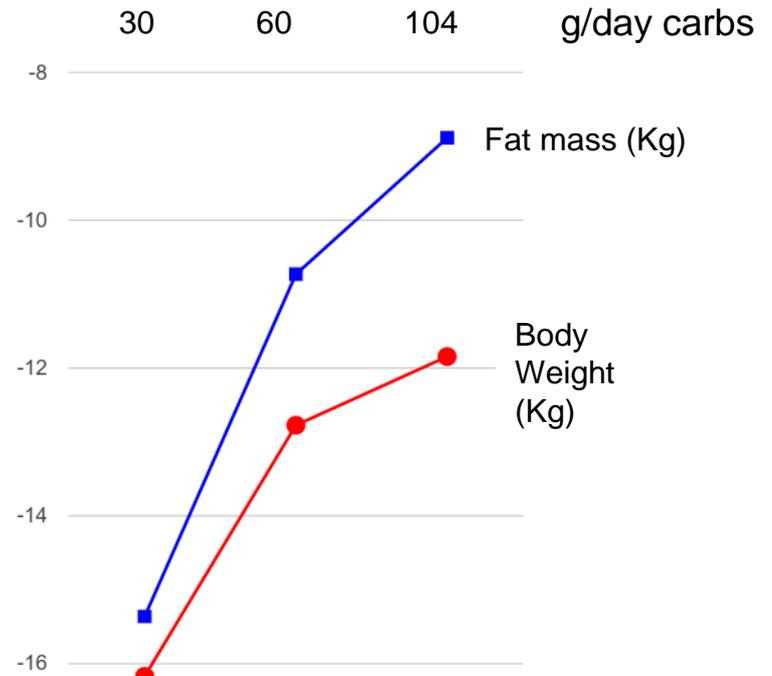


# Calories do NOT determine fat mass changes

3 Isocaloric diets, with different amounts of carbs



Alford et al. 1990



Young et al. 1971

No somos un horno

What is more fattening, 100 Calories of butter or 100 Calories of bread?

# Our body's reaction to food restriction

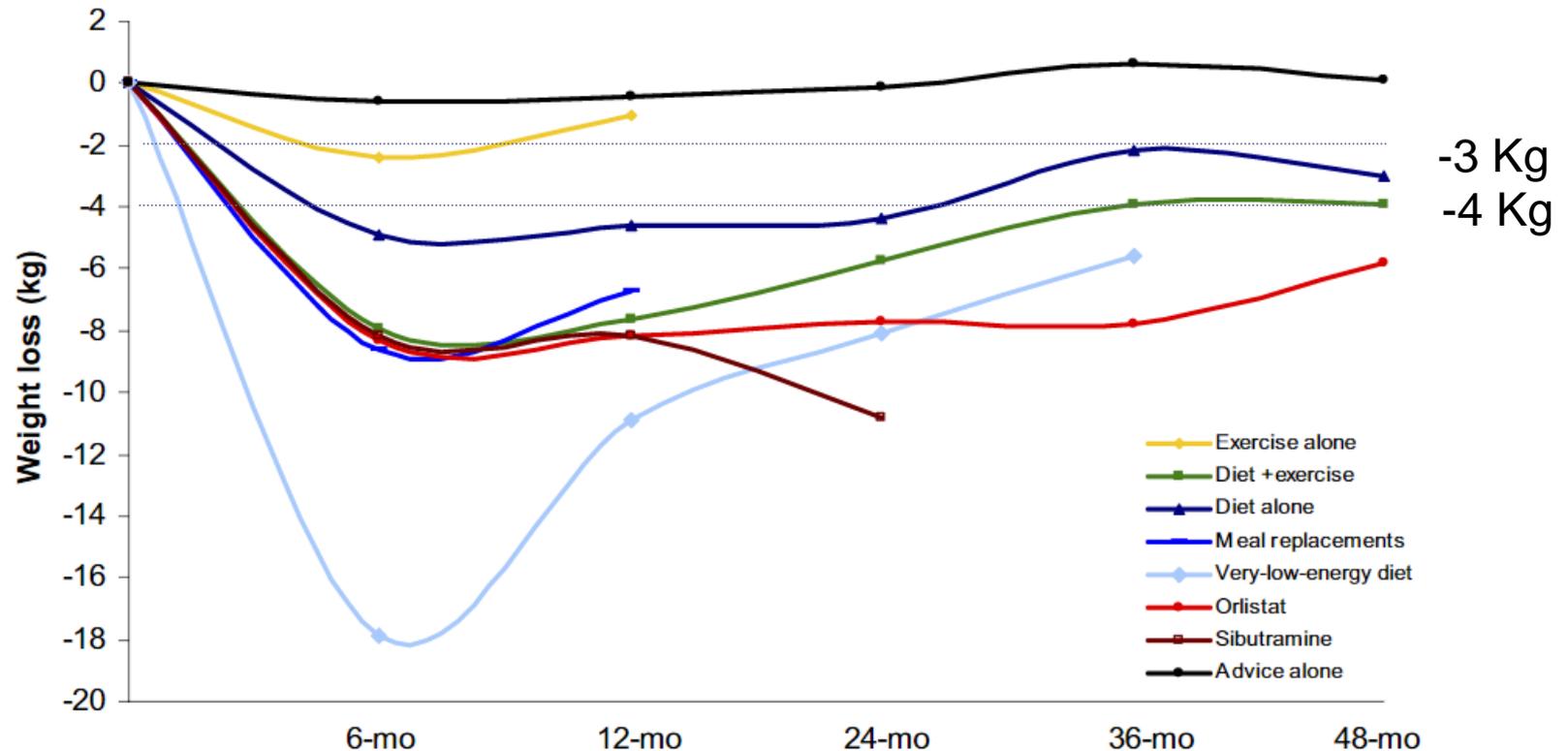
How does our body react when food is scarce?

1. Does it use body fat and muscle as sources for energy?
2. Does it improve its energy efficiency?
3. Does it try to store more food as body fat?

Do Thermodynamic Laws say how our body is going to react?

Is any of the options above impossible because it is not consistent with the Thermodynamic Laws?

# Is there scientific evidence?

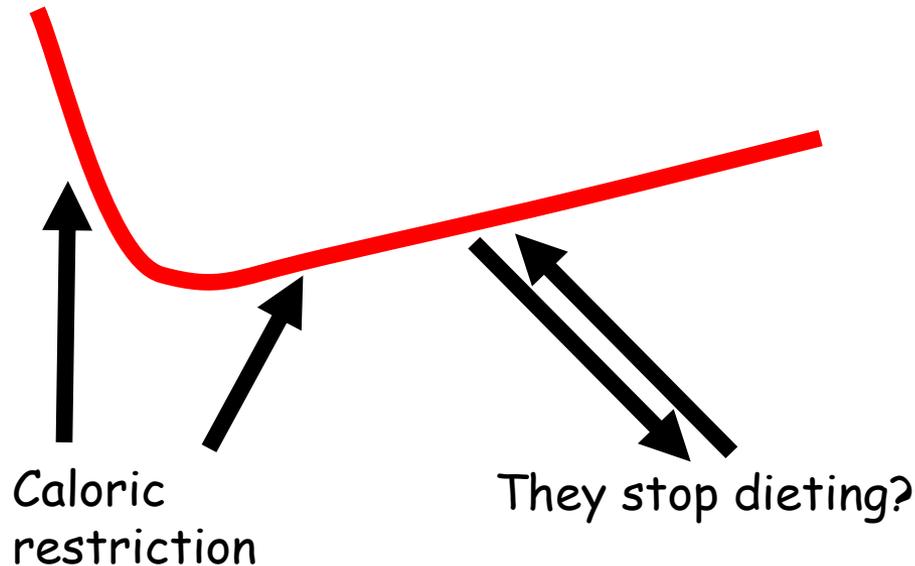


Combined results from 80 studies: 3-4 Kg lost after 4 years of dieting

That is the result for those who complete the study, it is worse for those who don't

(Does the trend change in the last year because they start dieting again?)

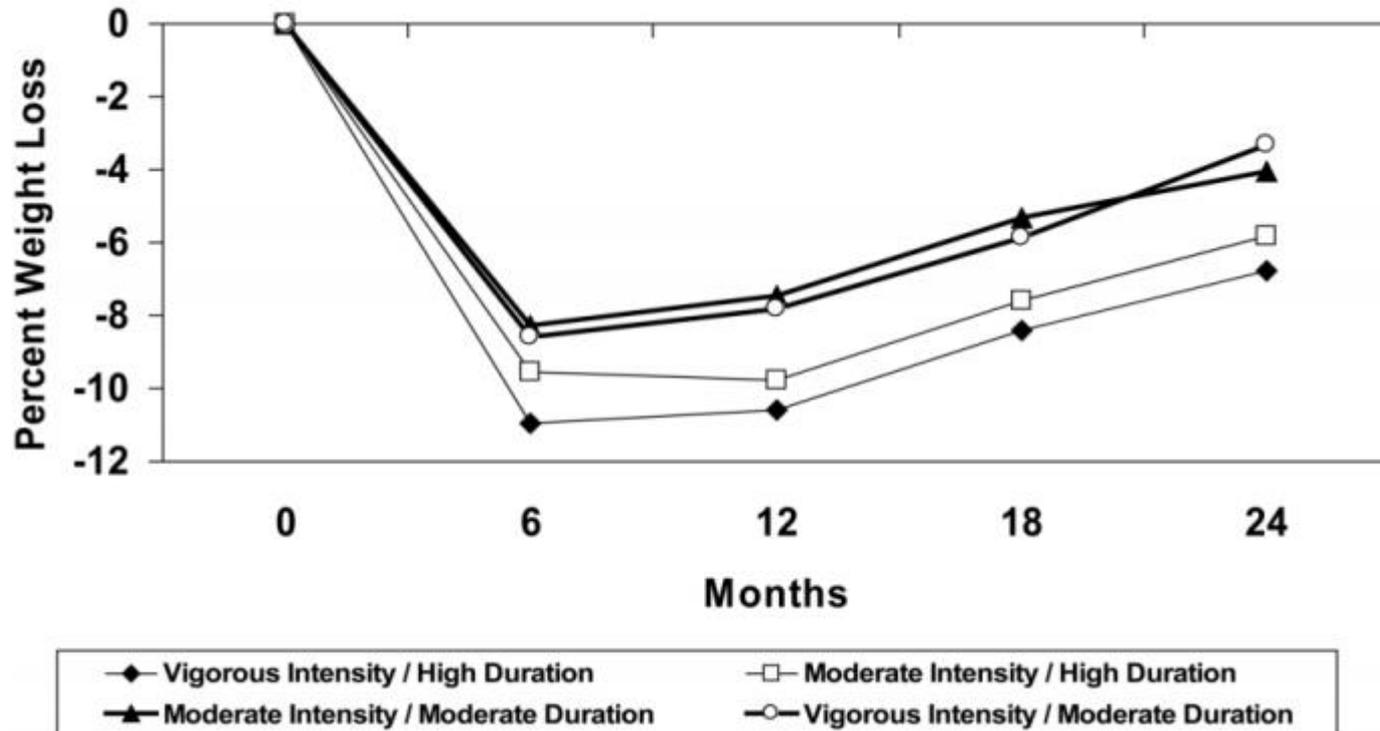
# The "rebound effect"



Options:

1. Obese people haven't got enough willpower to follow a diet in the long term
2. Our body reacts to food scarcity

# Is there scientific evidence?



The participants never stopped “eating less”  
The participants never stopped “exercising more”

[Dos años con ejercicio físico y dieta. Y un elefante en la habitación](#)

# Is it possible to lose weight?

- An important amount of weight lost (e.g. 25 Kg)
- Keeping the loss in the long term (e.g. 4 years)

It has never happened in a scientific experiment

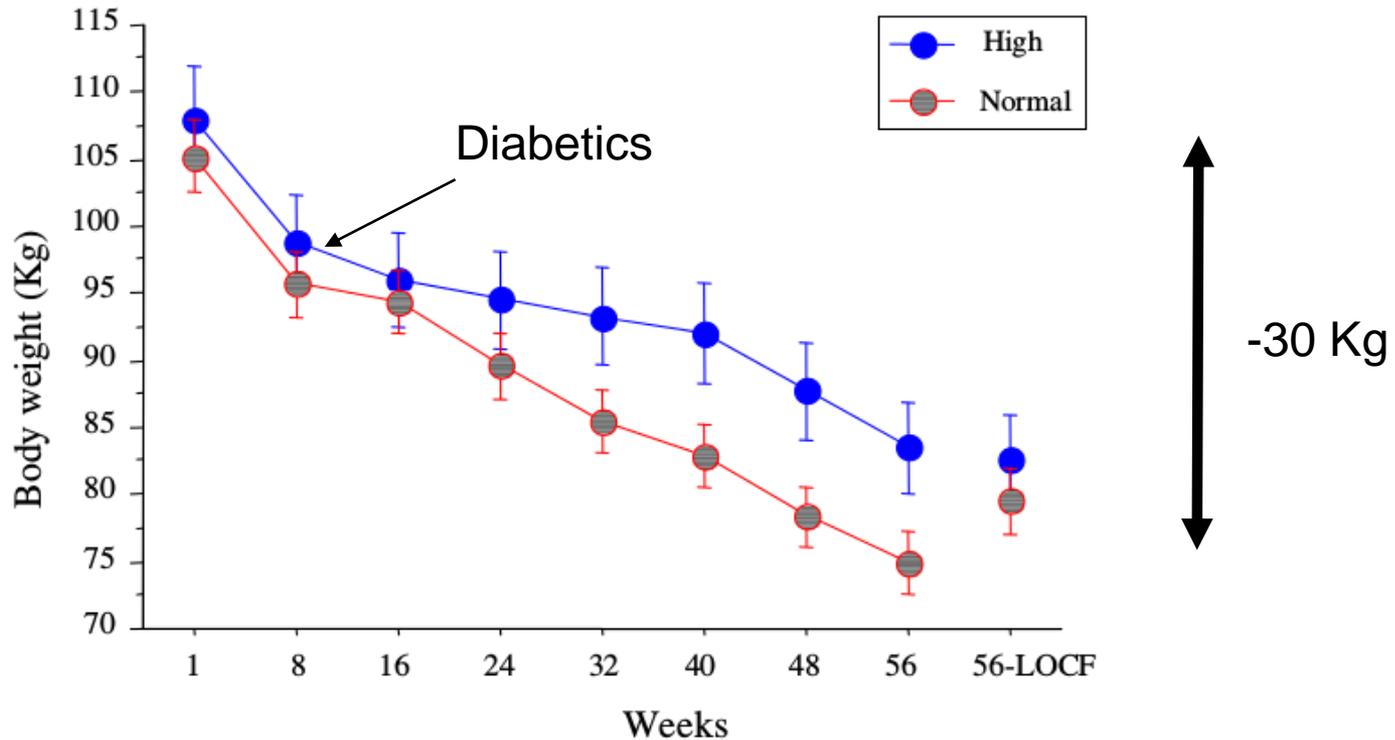
**NOTE 1:** the results from scientific experiments usually give us the mean weight loss as a result. A few people do lose a lot of weight, others gain weight

*“In simple obesity (body mass index = 30.0-34.9 kg/m<sup>2</sup>), the annual probability of attaining normal weight was 1 in 210 for men” ([see](#))*

**NOTE 2:** don't trust weight loss success statistics unless you can check out what they classify as “success” (how much weight lost and how long they kept the loss)

Si es cierto que “comer menos” NO adelgaza, ¿cómo es que nadie nos lo dice?

# Is it possible to lose weight?

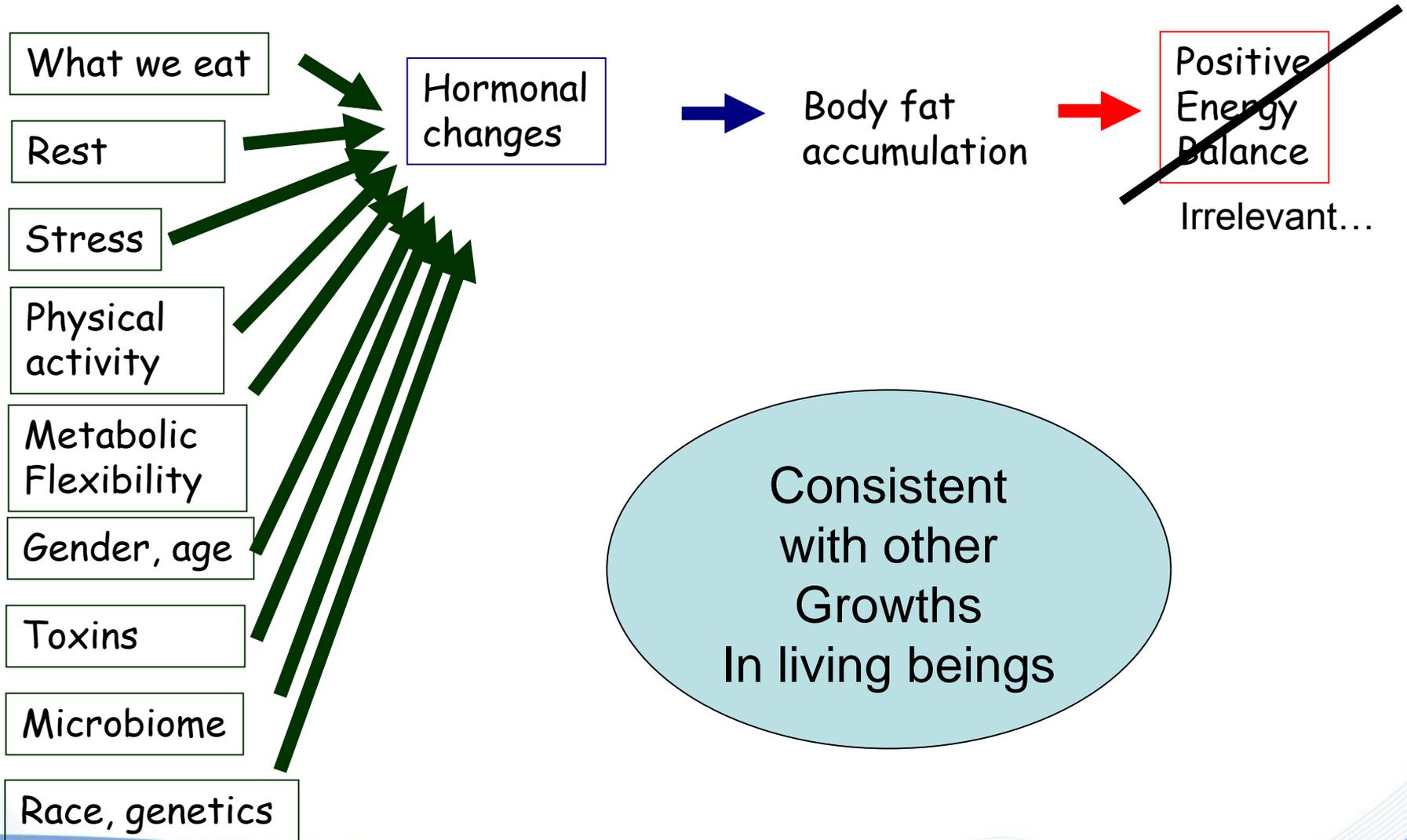


Low-carb diet

No sign of a "rebound effect"

Es posible perder peso, incluso teniendo diabetes

# Is this the true causality?

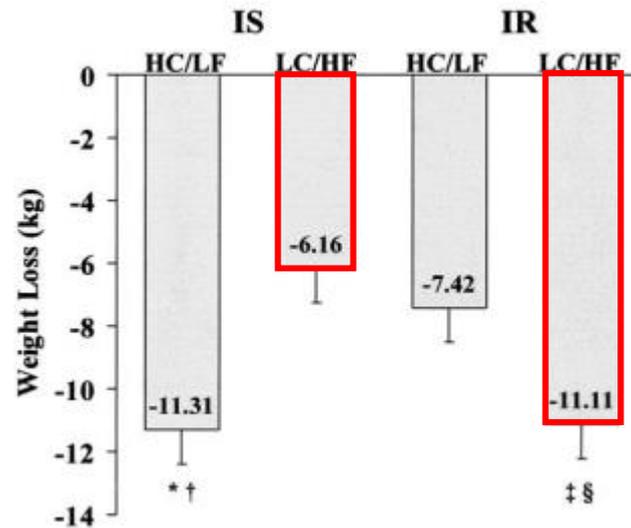


Consistent  
with other  
Growths  
In living beings

# Relevant data

- Experiments with **animals y and humans** show us that calories **don't** determine body fat changes:
  - The composition of the diet is important
  - The metabolic status of the patient is important
- Experiments with **animals y and humans** show us that living beings fight against caloric restriction:
  - Efficiency is improved (the same physical exercise load is done with less energy expenditure)
  - Fat accumulation is prioritized

# One diet to rule them all?



← Good insulin sensitivity (IS):  
high-carb is better

→ Insulin resistant (IR):  
low-carb is better

Pues yo como pan y no engordo

# What made us fat?

## A bad diet

Populations that transition to a Westernized diet invariably develop obesity:

- Acellular Carbohydrates (sugar, flour, grains)
- Sugary drinks
- Processed products (lots of added ingredients)
- Seed oils (soy, sunflower, etc.)

Where do you live?

# A final comment

- Avoiding what makes us fat may be not enough to lose weight
- Doing what makes us lose weight may be unnecessary to keep us lean

