

# *Forever Young*

**Secrets of delaying aging and  
living disease free**

**Part 4**

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What is the most effective aspect  
of diet/nutrition that has  
consistently been shown to  
reduce risk of chronic health  
conditions and to increase  
longevity?

**ANSWER:**

**Caloric  
restriction**

**“A man is as old  
as his arteries”**

# Vascular aging

```
graph TD; A[Vascular aging] --> B[Decreased nitric oxide synthesis]; B --> C[Increased production of reactive oxygen species (ROS)]; C --> D[Increased stiffness and thickness of arteries]; D --> E[Increased systolic and diastolic BP]; B --> F[Increased platelet aggregation effect]; F --> G[Increased vascular inflammation and atherogenesis];
```

Decreased nitric oxide synthesis

Increased production of reactive oxygen species (ROS)

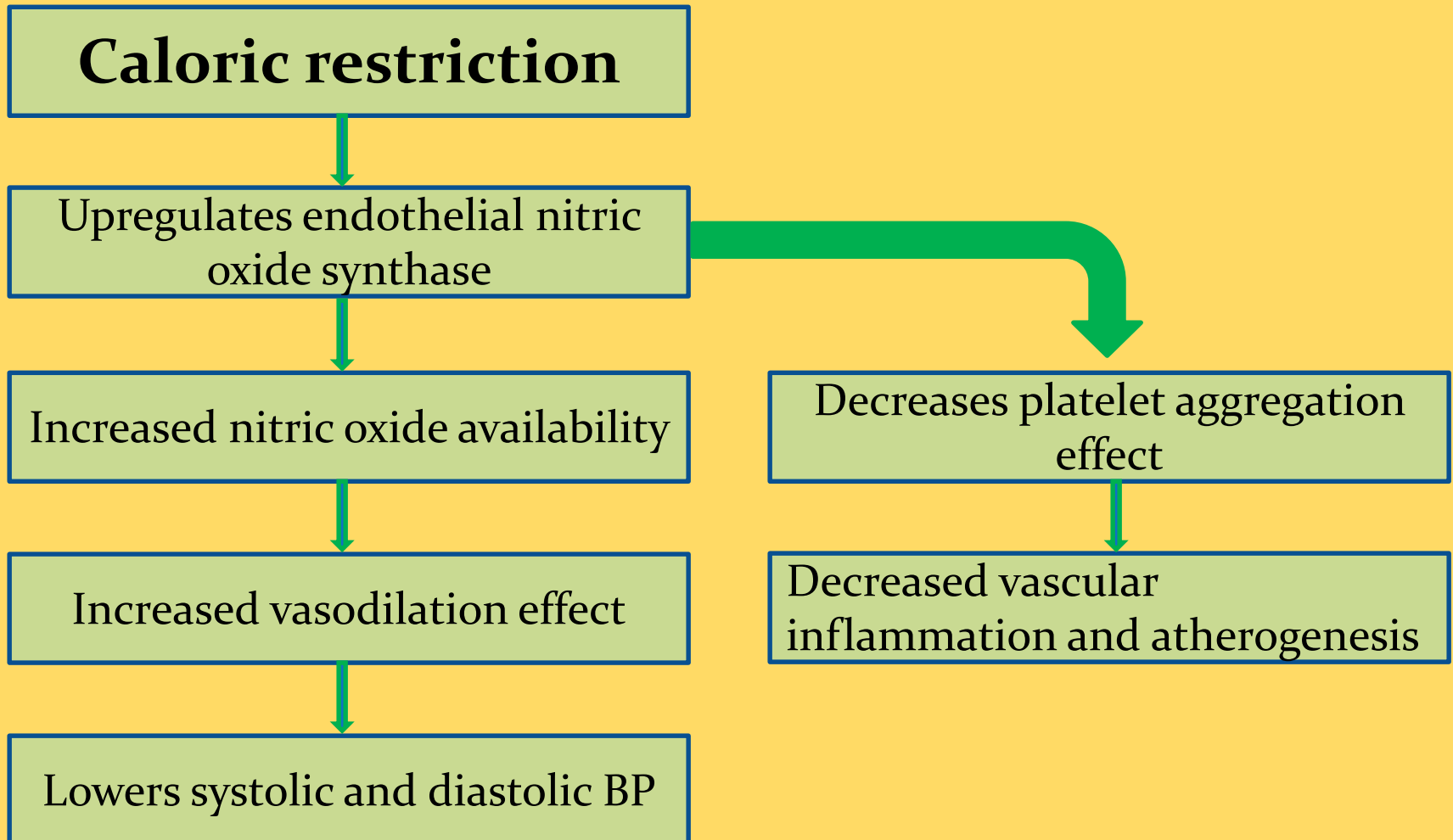
Increased stiffness and thickness of arteries

Increased systolic and diastolic BP

Increased platelet aggregation effect

Increased vascular inflammation and atherogenesis

# Caloric restriction – effect on arteries

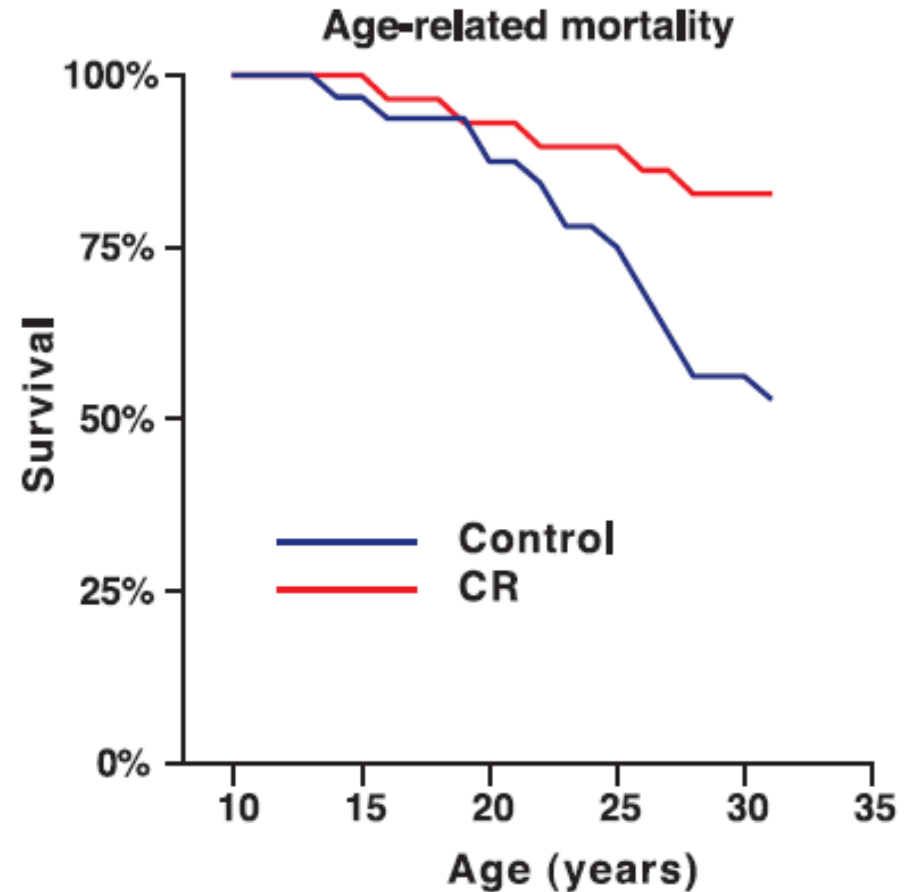
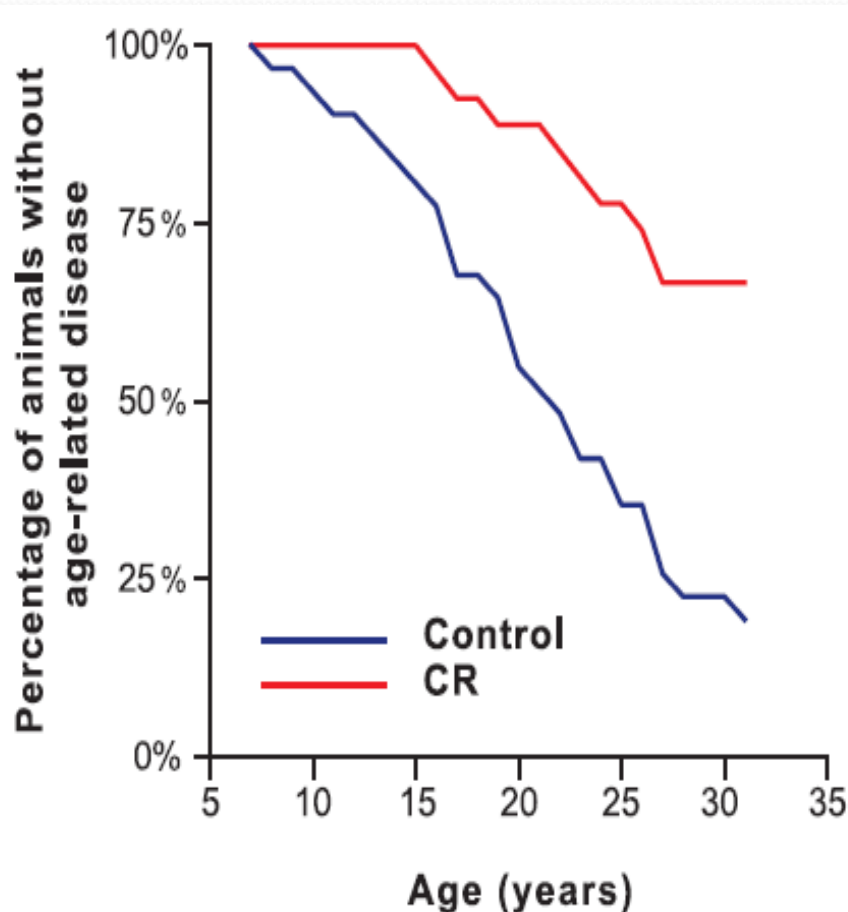


# Caloric restriction delays disease onset and mortality in Rhesus Monkeys

Colman et al., Science, 2009(July 10);325:201-204

- **N = 76, 7 to 14 years old rhesus monkeys**
  - **Group 1** - caloric restriction (CR) monkeys fed a diet with 30% caloric deficit
  - **Group 2** - control group with no dietary restriction
- Any animal that died underwent a necropsy by a board-certified pathologist who was blinded as to the animal's diet group

# Impact of caloric restriction on mortality and morbidity





**“... at any point in time, the control animals had three times the rate of death from an age-related cause when compared to animals under CR.”**

**Seeing  
is  
believing**



**A and B - a typical control animal at 27.6 years of age (about the average life span). C and D age-matched animal on CR.**

# Caloric restriction delays disease onset and mortality in Rhesus Monkeys

Colman et al., Science, 2009(July 10);325:201-204

**“Animals subjected to CR had statistically significant preservation of GM (gray matter - RP) volume in subcortical regions ... CR reduced age-associated brain atrophy in key regions that subserve motor function and aspects of executive function.”**

# **Calorie restriction in humans: An update**

Most et al. Ageing Research Reviews, 2017;39:36–45

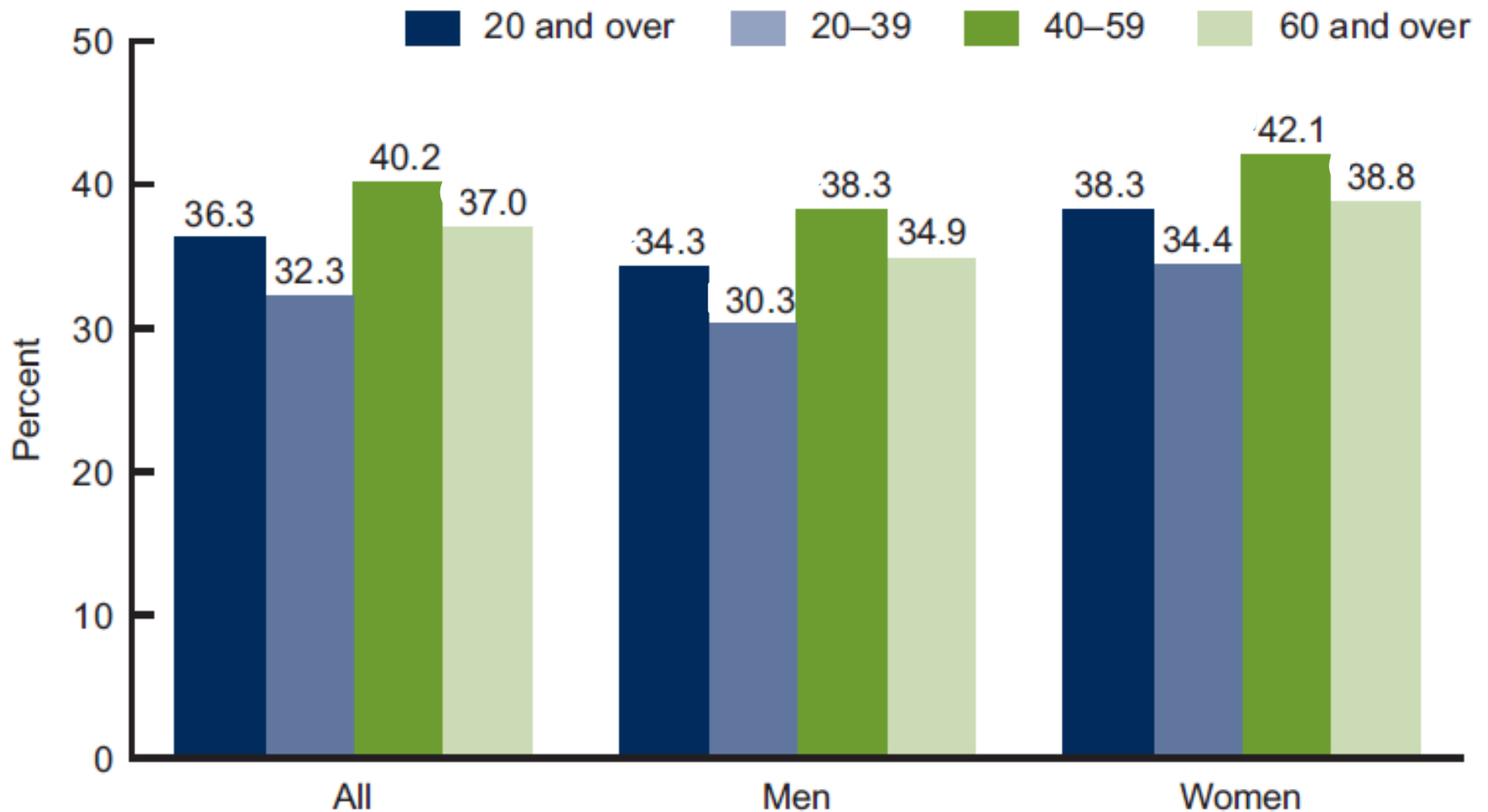
**“Calorie restriction (CR), ..., has been shown to extend healthspan and lifespan in rodent and primate models. Accumulating data from observational and randomized clinical trials indicate that CR in humans results in some of the same metabolic and molecular adaptations that have been shown to improve health and retard the accumulation of molecular damage in animal models of longevity. In particular, moderate CR in humans ameliorates multiple metabolic and hormonal factors that are implicated in the pathogenesis of type 2 diabetes, cardiovascular diseases, and cancer, the leading causes of morbidity, disability and mortality.”**

# Health benefits of caloric restriction

- ✓ Increased longevity
- ✓ Reduced risk of CVD
- ✓ Reduced risk of cancer
- ✓ Reduced risk of type 2 diabetes
- ✓ Reduced risk of dementia and Alzheimer's disease
- ✓ Reduced risk of Parkinson's disease
- ✓ Reduced risk of brain atrophy
- ✓ Reduced risk of endometriosis

**How is this  
applicable to you?**

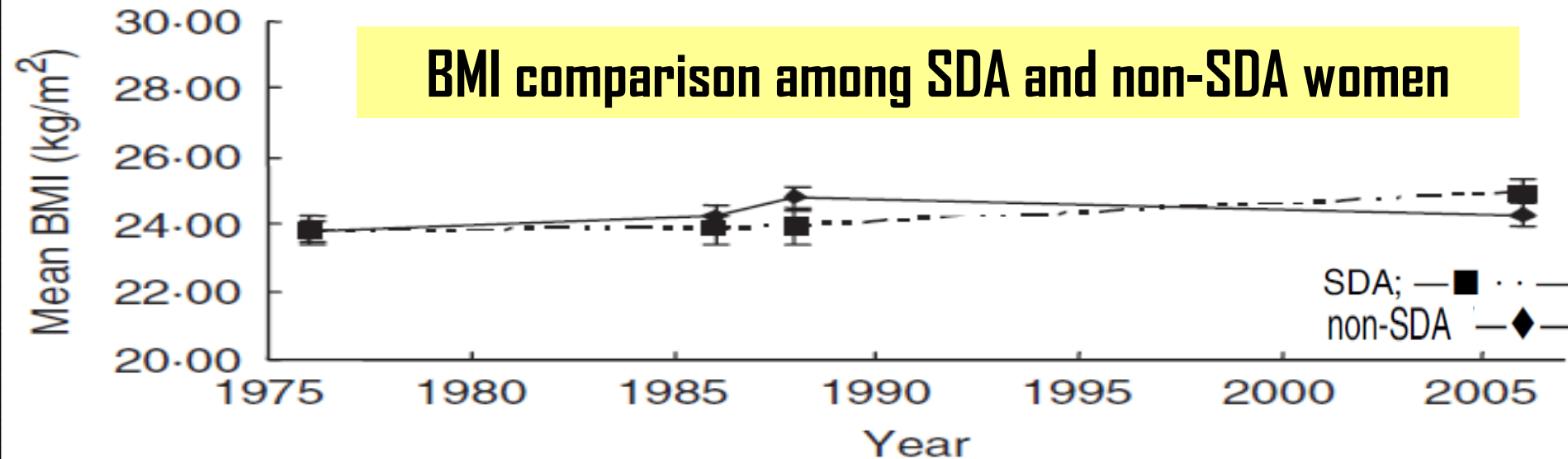
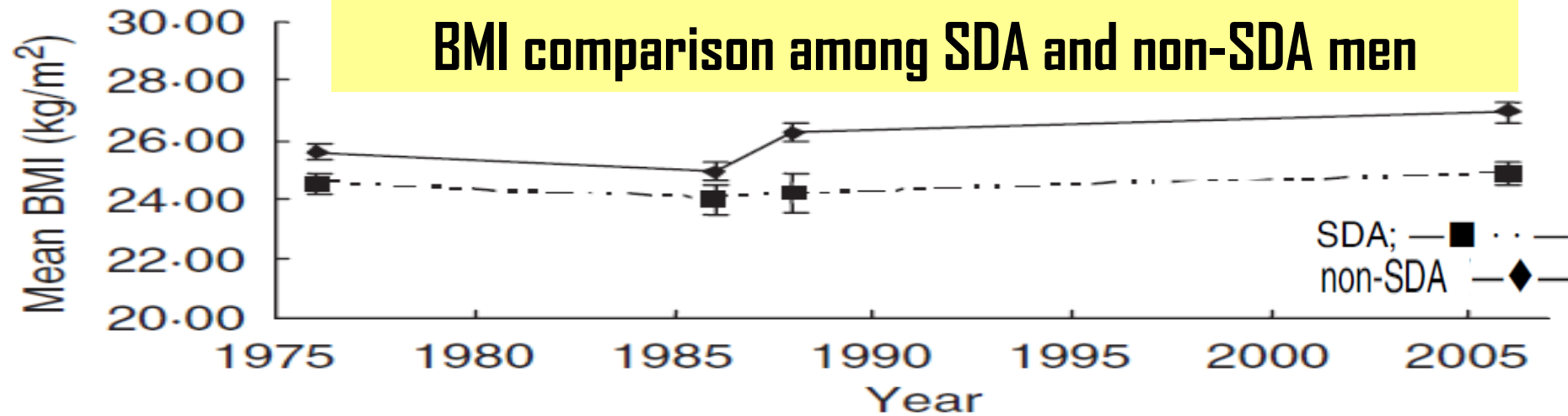
# Prevalence of obesity among American adults in 2011-2014





# Does the prescriptive lifestyle of Seventh-day Adventists provide 'immunity' from the secular effects of changes in BMI?

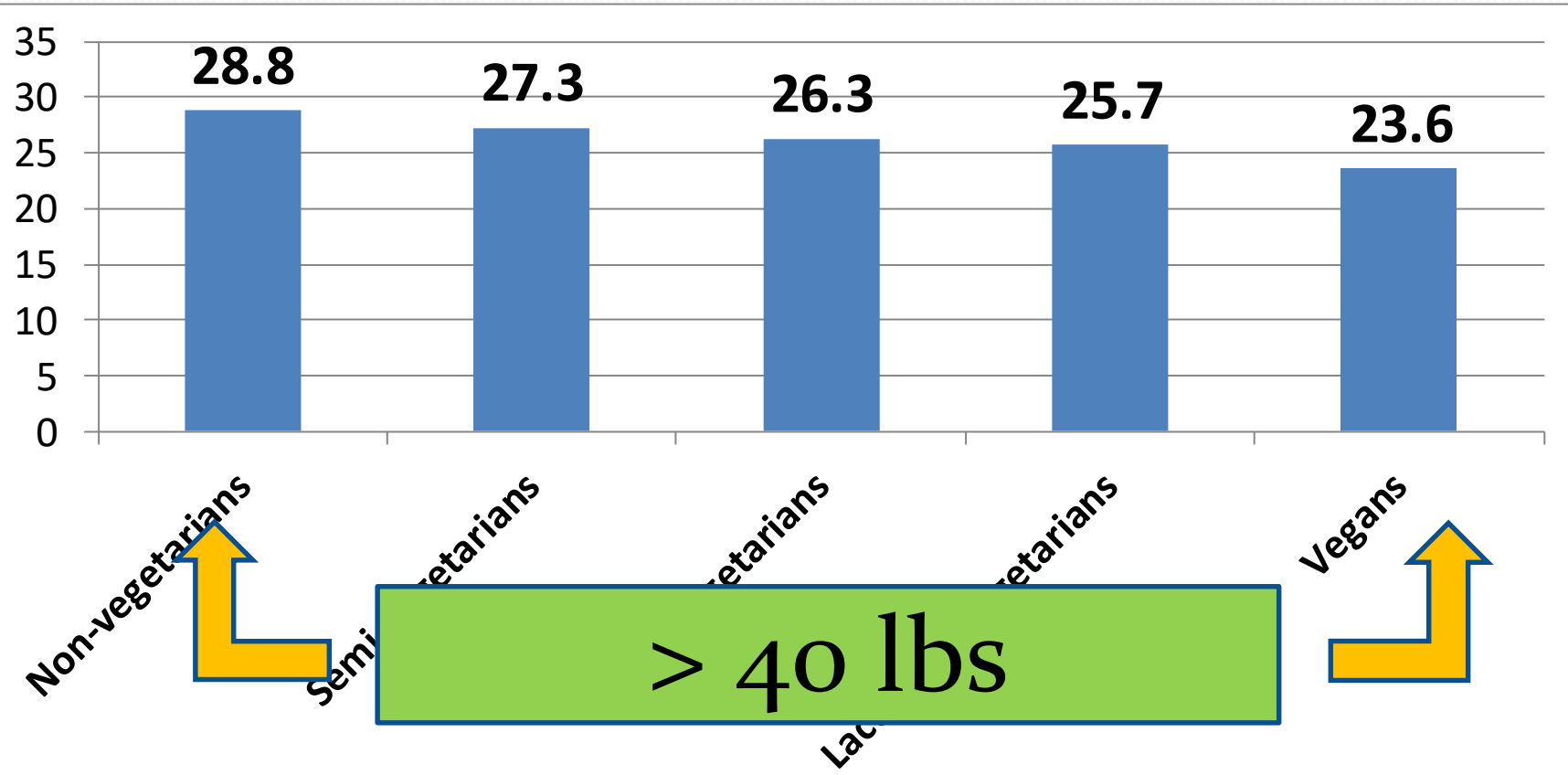
Kent & Worsley. Public Health Nutrition: 2008;12(4),472-480



# Type of Vegetarian Diet, Body Weight, and Prevalence of Type 2 Diabetes

Tonstad S., et al Diabetes Care 2009;32:791-796

## Average BMI by diet group

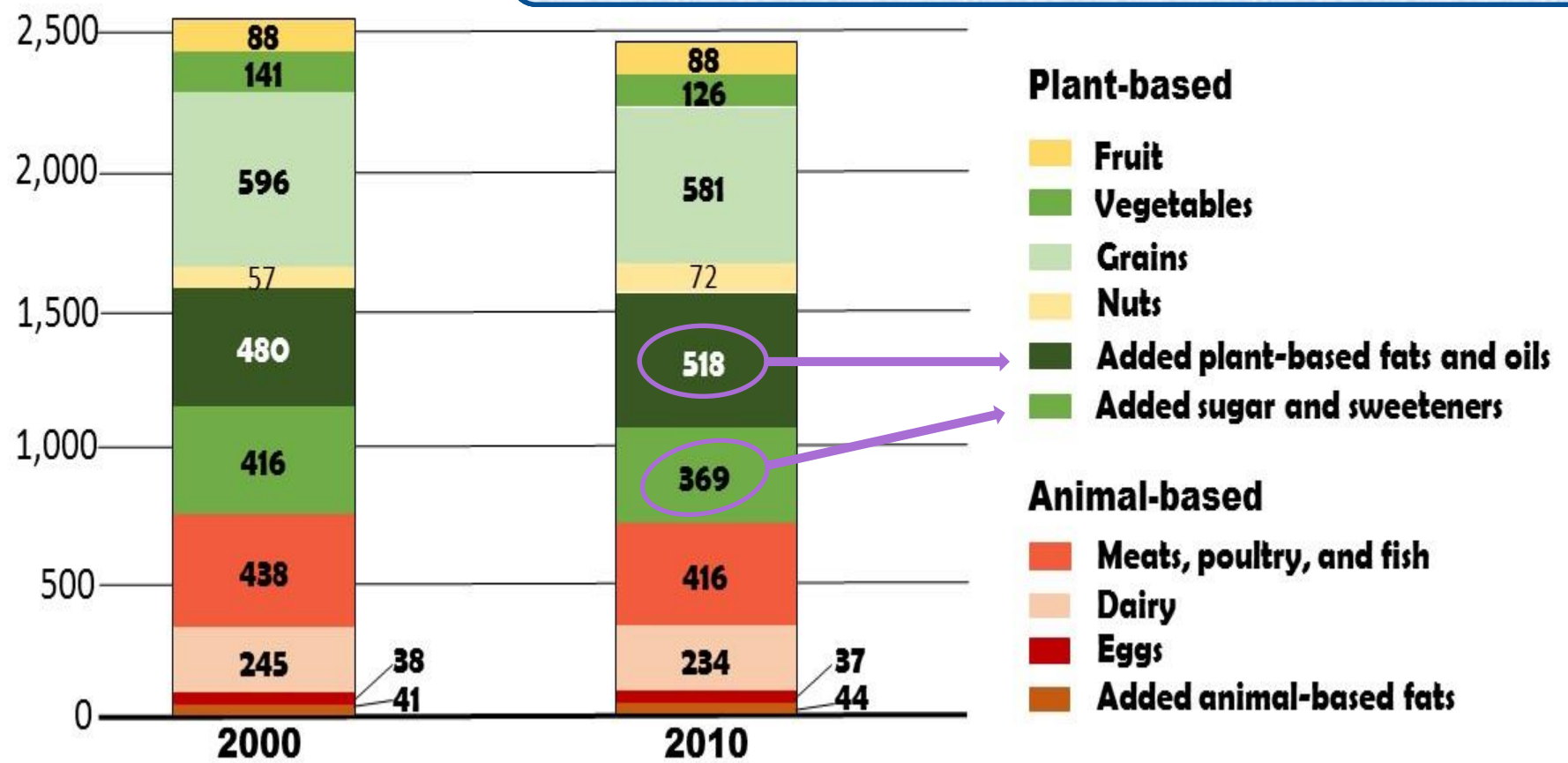


How can caloric  
restriction be  
implemented?

# Loss-adjusted availability of U.S. calories by food group

Daily calories per person

$$887/2500 \times 100\% = 35.5\%$$



Added fats and oils are added to food during processing or preparation and do not include naturally occurring fats, such as in meat, dairy products, nuts and avocados. Added animal-based fats include butter, lard, and edible beef tallow.

Source: USDA, Economic Research Service Loss-Adjusted Food Availability data.



**Starbucks White Chocolate Mocha (330 Kcal) contains 12 tsps of sugar, more than most 12 oz. of soft drinks**



**Starbucks Mocha Frappuccinio (410 kcal) contains 12 tsps of sugar, and 9 grams of saturated fat**







**3.5 oz. = 540 kcal**

**Equivalent of**

**1.6 lbs of potatoes**

**6.5 slices of whole  
wheat bread**










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**3.5 oz. of potato chips = 544 kcal**

**Equivalent of**

1 7-inch banana = 88 kcal

1 2.5-inch diameter orange = 69 kcal

1 3-inch diameter apple = 95 kcal

1 medium size bosh pear = 120 kcal

2 cups of strawberries = 92 kcal

1 medium size potato = 58 kcal

1 medium size tomato = 18 kcal

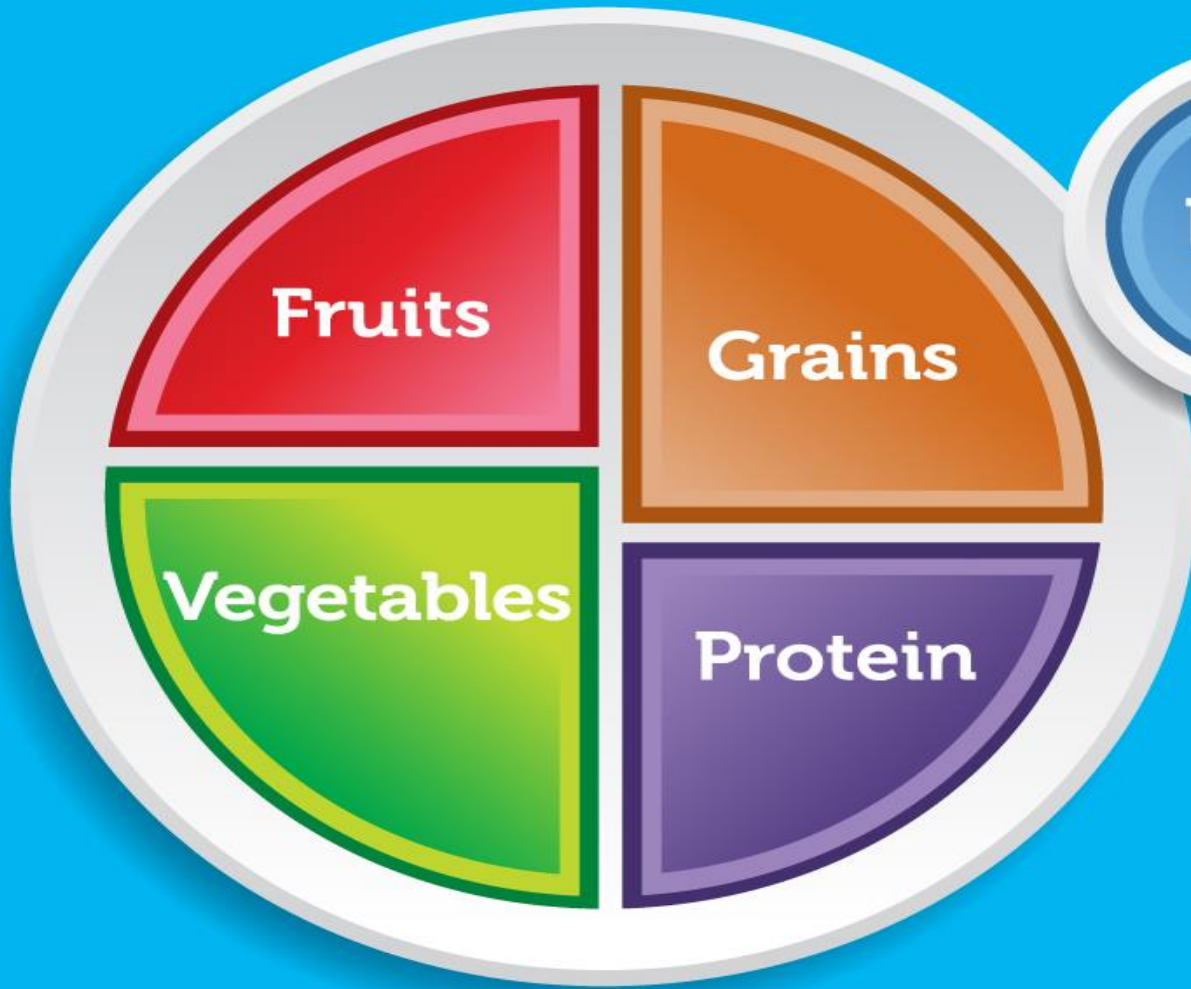
**Total = 540 kcal**



**Doughnuts (195 kcal),  
croissants (210 kcal), pies  
(410 kcal), cakes (up to  
1500 kcal), brownies (110  
kcal)**







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**“If we are to walk in the light God has given us, we must educate our people, old and young, to dispense with these foods that are eaten merely for the indulgence of appetite. Our children should be taught to deny themselves of such unnecessary things as candies, gum, ice cream, and other knickknacks, that they may put the money saved by their self-denial into the self-denial box, of which there should be one in every home. By this means large and small sums would be saved for the cause of God.”**

E.G. White Counsels on Diet and Foods, p. 519



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**Choose chicken \$20, sheep \$25, cow \$85**



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