

CALORIE RESTRICTION, AGEING AND LONGEVITY

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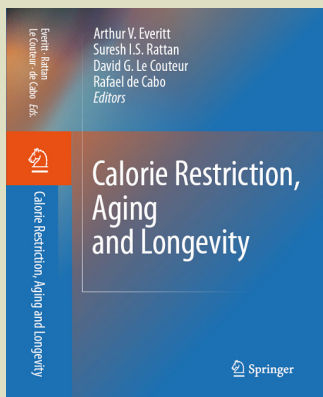
INVITATION

In July 2008 Dr Max Haring from Springer
invited me to write a book on

Calorie Restriction and Aging.

With the help of 3 co-editors and 46 authors
in one year **we wrote 18 chapters** and
submitted to Springer for publication.

It was published in May 2010



Food Energy Drives Body Functions

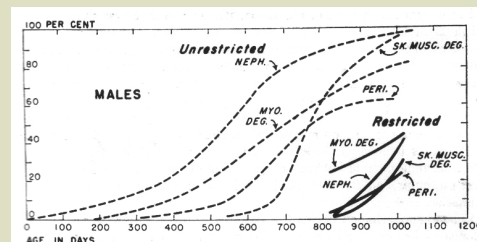
HIGHER ENERGY INTAKE leads to

- faster function (eg **heart rate increases**)
- greater function (**muscles work harder**)
- **more damage to tissues** (eg pathology)
- more cardiovascular disease, diabetes,
cancer and shorter life

**Rats on 40% Food Restriction
live 20% longer** (McCay 1935)



**CR Delays Disease Onset
in Rats** (Berg and Simms, 1965)



Calorie Intake and Longevity

In 18 developed countries in 2000

JAPAN lowest calorie intake(2762 cal/day
and greatest Life Span (80.7 yr)

USA highest calorie intake (3772 cal/day)
and shortest Life Span (77.1yr)

WOMEN eat 25% less food than **MEN**
and live 5 years longer

6 Years of 20% CR

(Fontana et al 2004)

18 Healthy adults aged 35-82 yr on 20% CR

produced 20% or more reductions in

- body weight (to BMI 19)
- blood pressure
- blood cholesterol
- blood glucose

reduces risk of death from cvd & diabetes

60 Years of 10% CR in Humans

(Willcox B, 2010)

No life-long CR studies in humans

1950s children in Okinawa ate 10% less than
those in Tokyo & lived longer (81.2 yr) than
Japanese (80.7yr) & USA (77.1yr) in 2000

OKINAWANS and **JAPANESE** are Longest
Living people on Lowest Calorie Intake

-lower stroke, CV and cancer mortality

Life Expectancy has increased by 30 years since 1900

1900- 1950 Better public health & medicine

Reduction of infectious diseases due to

- improved sanitation
- antibiotics and vaccines

1950- 2000 Better nutrition and medicine

Reduction of heart disease due to

- more vitamins, less fat, less smoking
- drugs to lower BI pressure and cholesterol

OVEREATING and LESS PHYSICAL EXERCISE

Over the last 30 years

Overeating starting in childhood is
increasing the risk of CVD and diabetes

PREVENT by eating less
and exercising more

Recommendations for a Longer Life

**Establish a Healthy Life Style when Young
and maintain throughout life**

- Don't overeat, eat 5 vegetables per day
- Prevent overweight in the child and adult
- Take regular physical exercise
- Don't smoke
- Have regular medical check-ups