

# **Effects of training in Recreational Sports Groups. A Longitudinal study ( 1976 – 2006 ) in Dutch Men and Women**

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# Longitudinal ( 1976 – 2006 ) study in 5 Recreation Sports Groups.

- During 30 years 49 women and 62 men ( n =111 ) were tested in the Sportcenter of the University of Nijmegen ( Netherlands) in the Department of Exercise Physiology.
- The subjects were regularly controlled for Body Composition, VO2max, Blood pressure and Training activities (Telemetry). During the whole period 4 questionnaires were completed by the participants.

# Results Questionnaire (01-12-2005)

**Recreation Sports Groups**: 2 Women groups and 3 Men groups. (The Netherlands, Nijmegen).

Women: (n=29) Average Age: 61,5 years (sd 6,6)

Men: (n=28) Average Age: 66,2 years (sd 8,5)

Average **Training frequency** per week: 2,43 (sd 1,3) for women and 2,53 (sd 0,7) per week for men.

**Active years in sport**: Women: 22,8 + Men: 34,5 yrs.

# Methods:

- 1. Body Composition: Height (0,5 cm), Weight (0,1 kg), Sum of 4 Skinfolds ( Method of Durnin), Percentage Body Fat ( calculation), Fat Free Mass (calculation), Blood pressure in rest (Riva-Rocci).
- 2. VO2max, method of Åstrand. In  $L \cdot \text{min}^{-1}$ ; in  $\text{ml} \cdot \text{kg}^{-1} \cdot \text{min}^{-1}$  and in  $\text{ml} \cdot \text{kgffm}^{-1} \cdot \text{min}^{-1}$ .
- 3. Telemetry. Use of heart rate monitor ( Polar).
- 4. Questionnaire. Will be discussed in this presentation.

**Average Training time per session:**

Women: 59,7 minutes (sd 4,4) and

Men: 68,6 minutes (sd 16)

**Training intensity per session:**

Women: Light (n=10); Average (n=17); Heavy (n=2).

Men: Light (n=8); Average (n=20); Heavy (n=0).

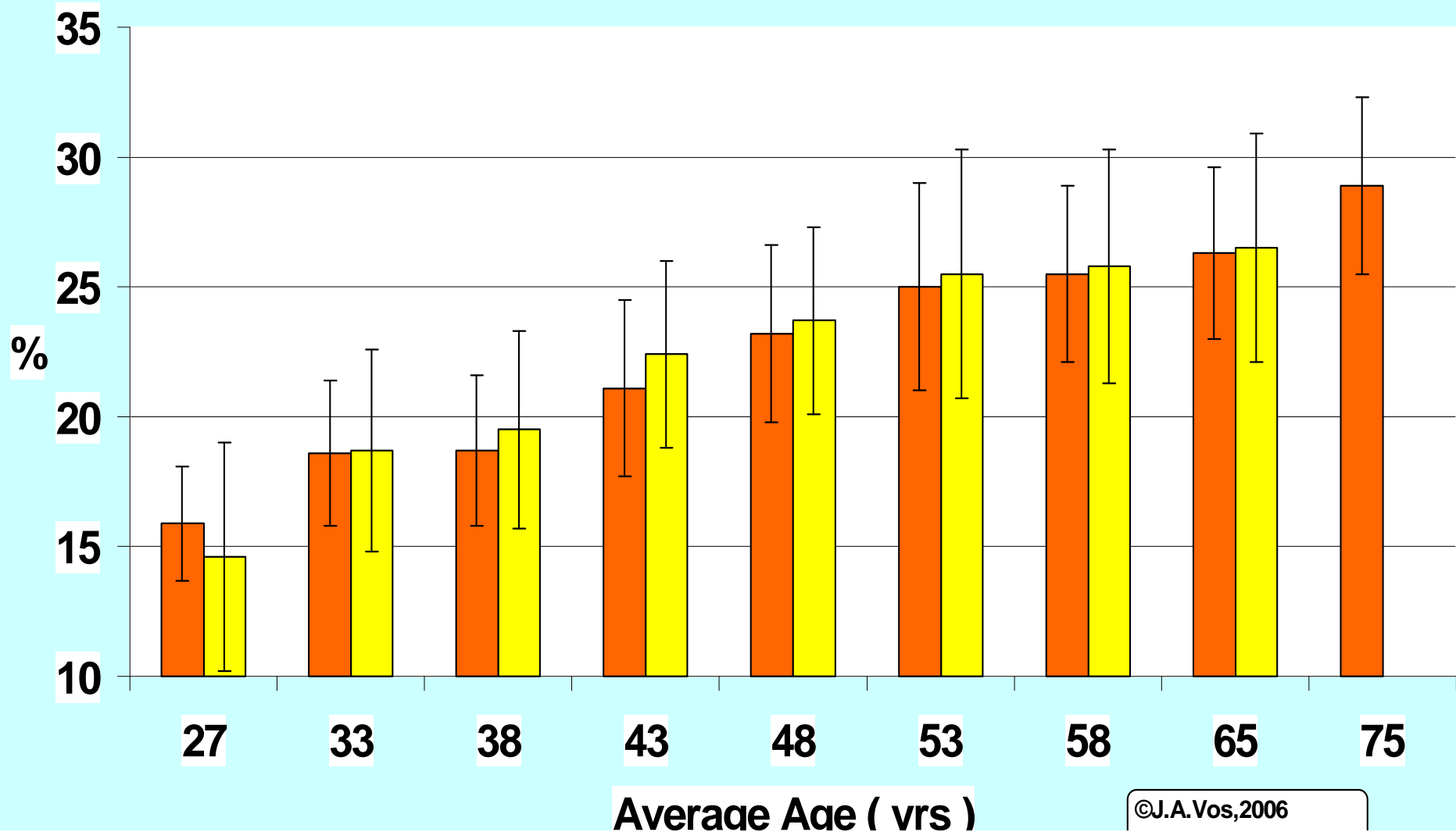
**Average Age parents died:**

Women (n=26) Mother = 74,7 yrs(sd 14) and  
(n=22) Father = 72,4 yrs ( sd 12,7).

Men (n=23) Mother = 77,5 yrs ( sd 9,3) and  
(n =26) Father = 74,9 yrs ( sd 10,6).

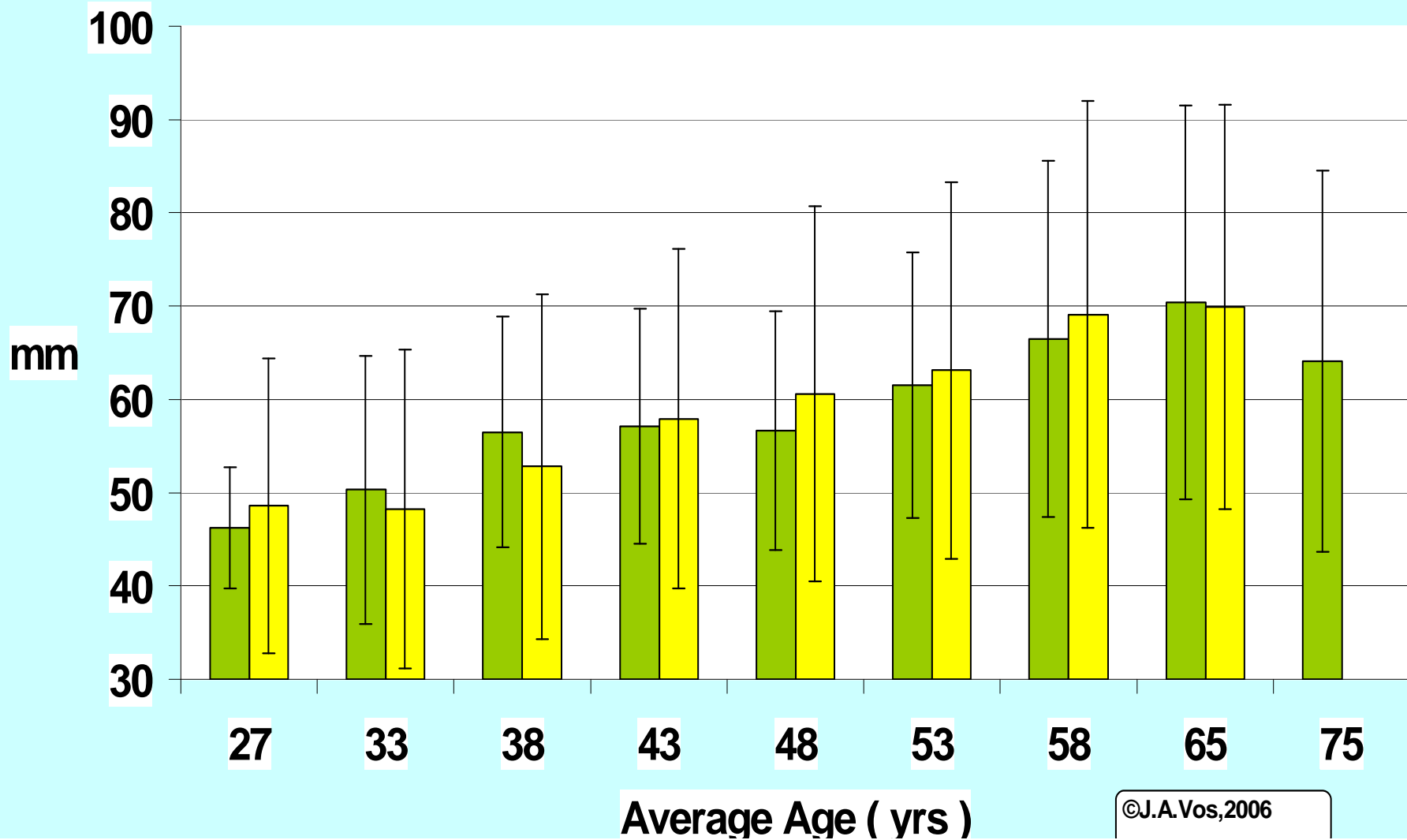
# Recreation Sports Groups Men Percentage Fat (%) Longitudinal versus Transversal ( $\pm$ sd)

Longitudinal Transversal



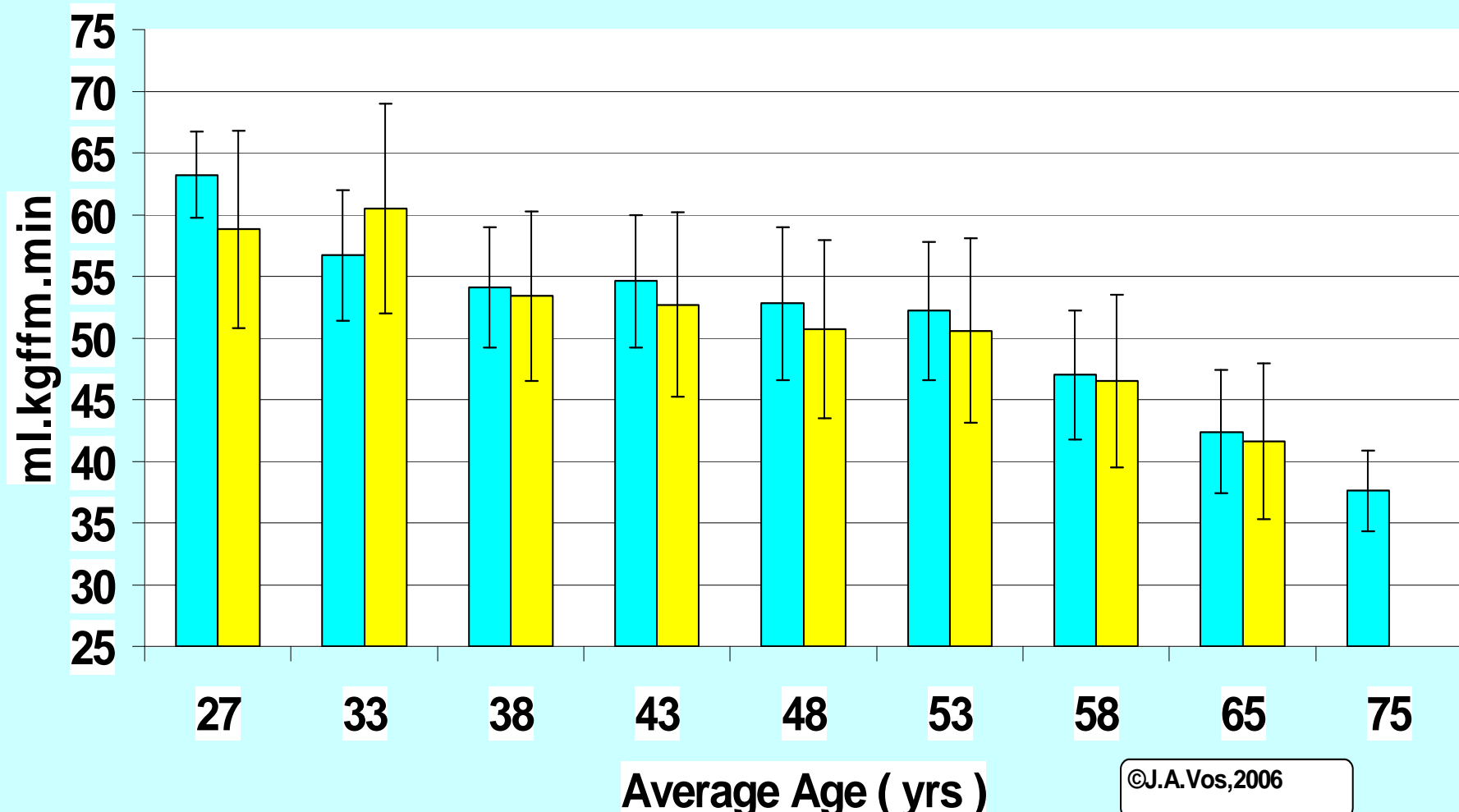
# Recreation Sports Groups Women Sum 4 Skinfolds (mm) Longitudinal versus Transversal ( $\pm$ sd)

■ Longitudinal ■ Transversal



# Recreation Sports Groups Women VO<sub>2</sub>max ( ml.kgffm<sup>-1</sup>.min<sup>-1</sup>) Longitudinal versus Transversal (± sd)

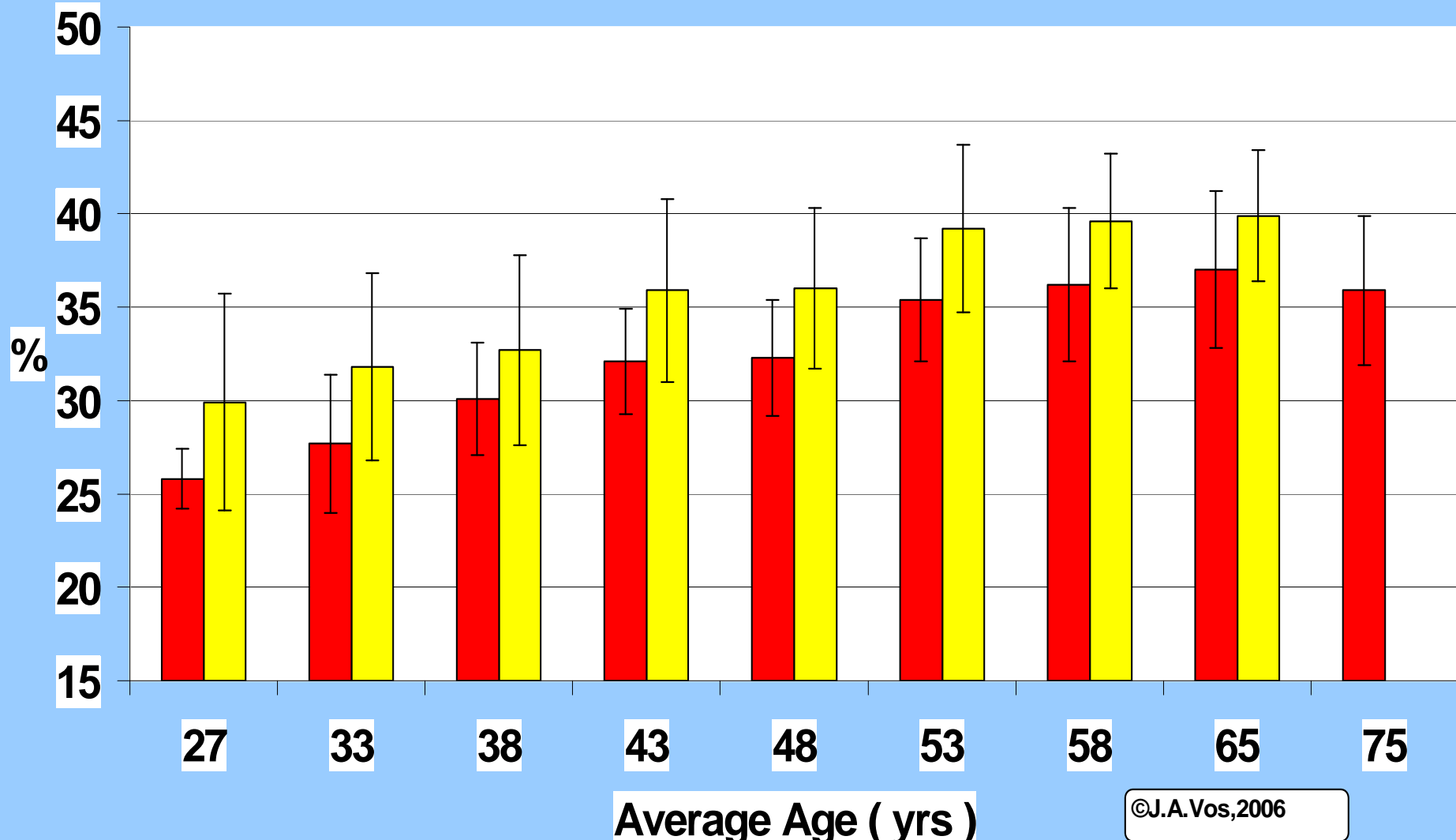
■ Longitudinal ■ Transversal





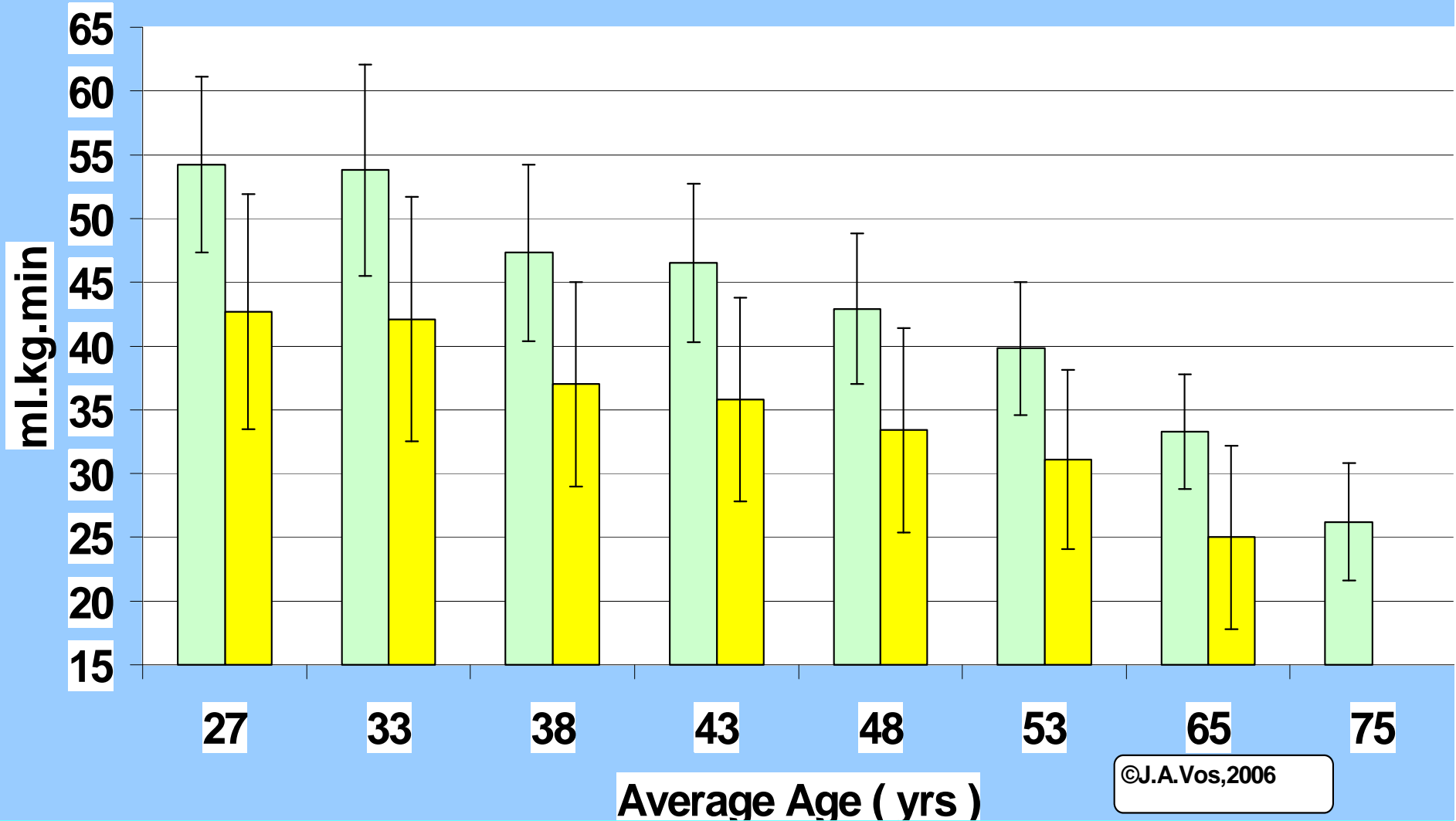
# Recreation Sports Groups ( Longitudinal ) versus Untrained Women ( Percentage Fat ( % ) ( $\pm$ sd )

■ Longitudinal ■ Untrained



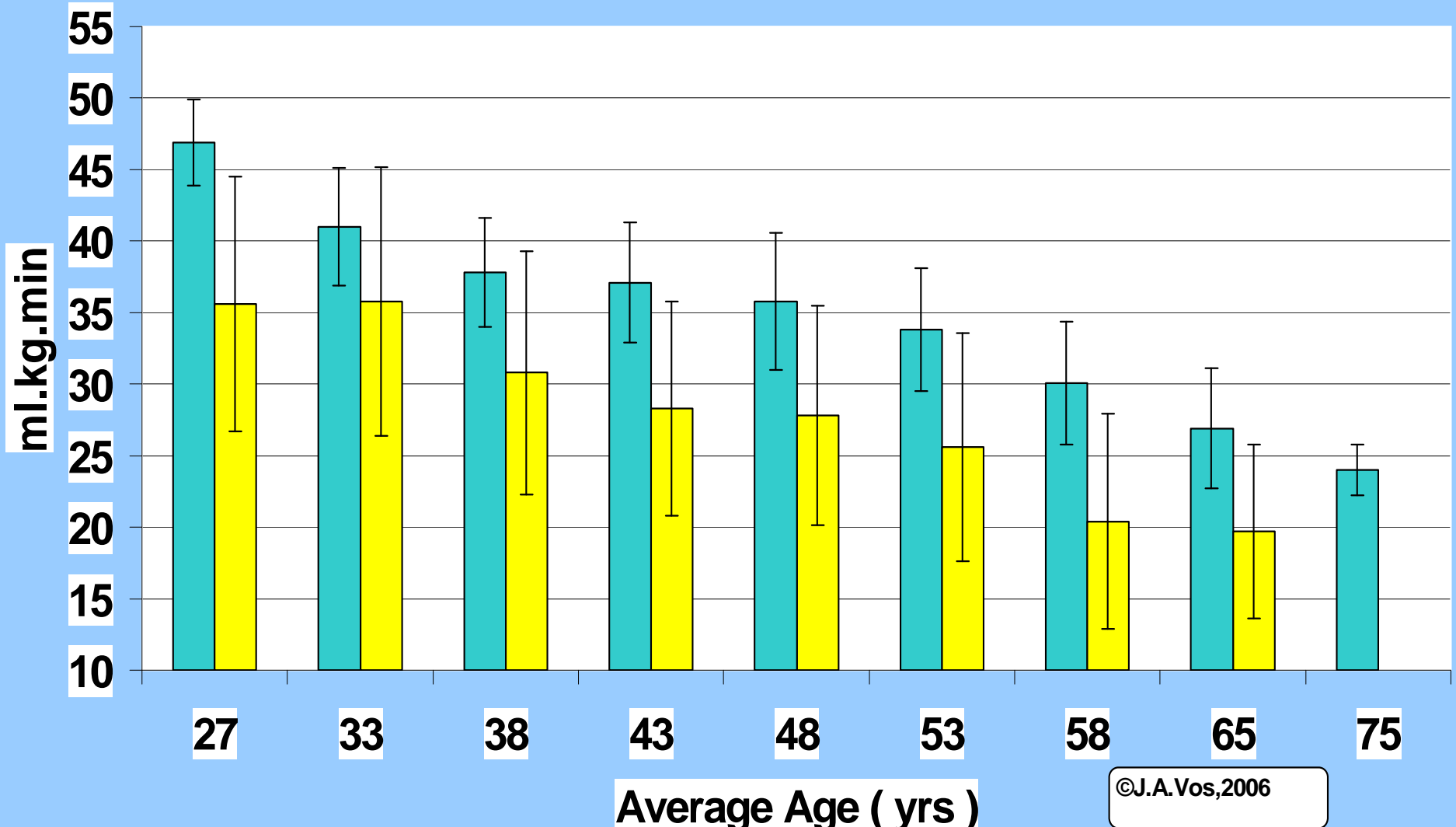
# Recreation Sports Groups ( Longitudinal ) versus Untrained Men ( VO<sub>2</sub>max ) ( ml.kg<sup>-1</sup>.min<sup>-1</sup> ) (± sd)

Longitudinal Untrained



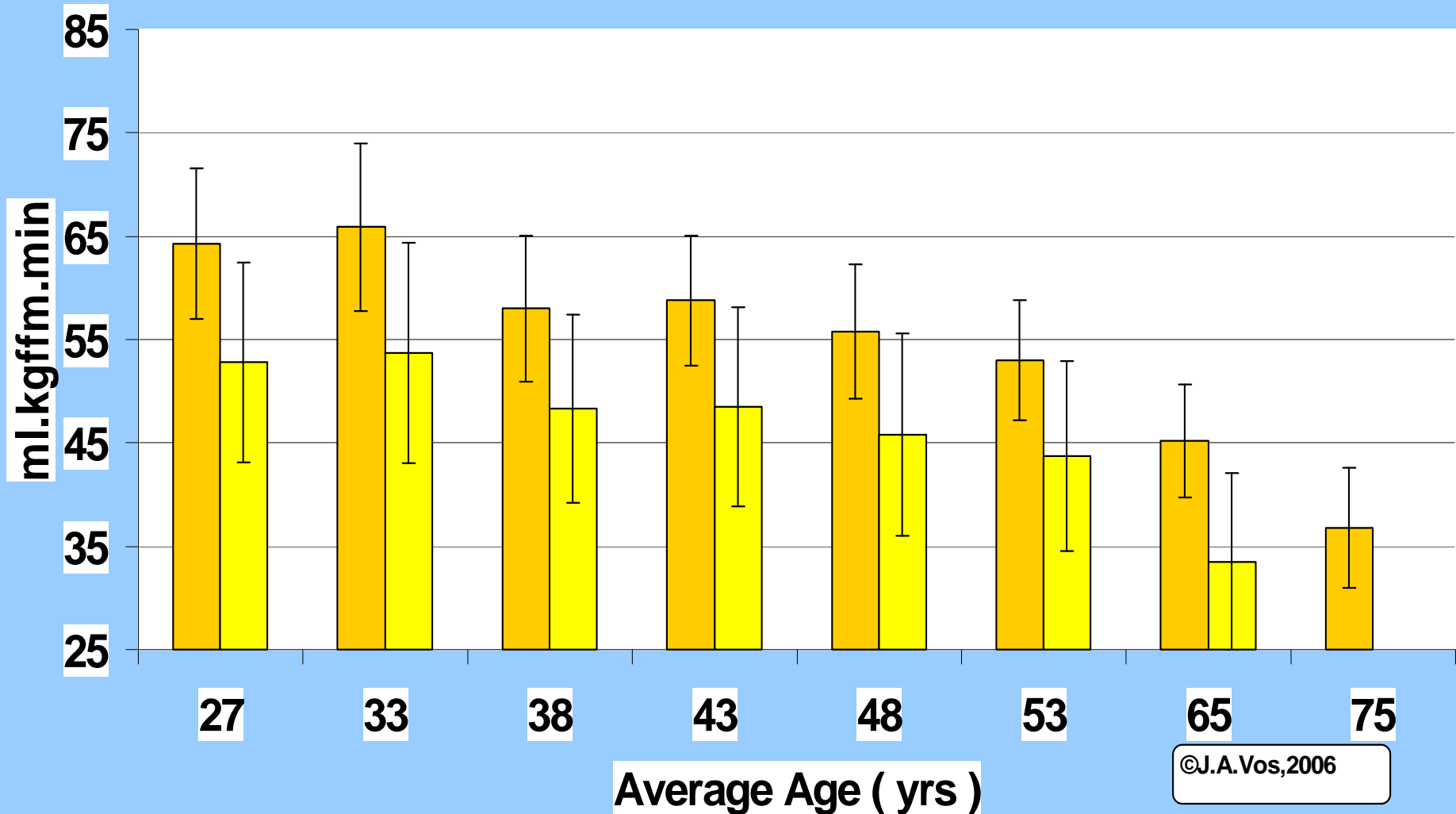
# Recreation Sports Groups ( Longitudinal ) versus Untrained Women ( VO<sub>2</sub>max ) ( ml.kg<sup>-1</sup>.min<sup>-1</sup> ) ( ± sd)

■ Longitudinal ■ Untrained



# Recreation Sports Groups ( Longitudinal ) versus Untrained Men ( VO<sub>2</sub>max ) ( ml.kgffm<sup>-1</sup>.min<sup>-1</sup> ) ( ± sd)

■ Longitudinal ■ Untrained



**Average Consumption Alcohol in glasses per week:**

Women: (n=21) 9,6 ( sd 6,7 ) and

Men: (n=22) 9,3 ( sd 7,6 )

**Attention Food Habits:**

Women: Yes ( n=27) and No ( n=2)

Men: Yes ( n=25) and No ( n=3)

**Vitamines/Minerals Extra:**

Women: Yes (n=14) and No ( n=15)

Men: Yes ( n=8) and No ( n=20).

**Sanitary stops at night:**

Women: Yes ( n=23) and No ( n=6)

Men: Yes ( n=22) and No ( n=6)

**Menopause complaints:** Yes ( n=10) and No ( n=18)

**Prostate gland complaints:** Yes ( n=5) and No ( n=23).

**Dyspnea:**

Women: Yes ( n=2) and No ( n=27)

Men: Yes ( n=1) and No ( n=27).

**Dizziness after Training:** Women Yes ( n=1)

and Men Yes ( n=0)

## **Smoking Habits:**

Women Yes: ( n=2) 1-5 cigarettes a day and

Men Yes: ( n=1) 1-5 cigarettes a day.

## **Ankles Edema:**

Women ( n=2) and Men ( n=0)

## **Occupation “Sitting”:**

Women: ( n=10) and Men ( n=20)

## **Occupation “Moving”:**

Women: ( n=19) and Men ( n=8)

## Complaints:

Women

Men

<b>Hip/Knee/Ankle:</b>	<b>8</b>	<b>15</b>
<b>Neck/Shoulder:</b>	<b>9</b>	<b>7</b>
<b>Hypertension:</b>	<b>6</b>	<b>5</b>
<b>Low Back Pain:</b>	<b>3</b>	<b>8</b>
<b>Arthrose/Arthritis:</b>	<b>3</b>	<b>7</b>
<b>Muscles:</b>	<b>2</b>	<b>7</b>



## Complaints:

Women

Men

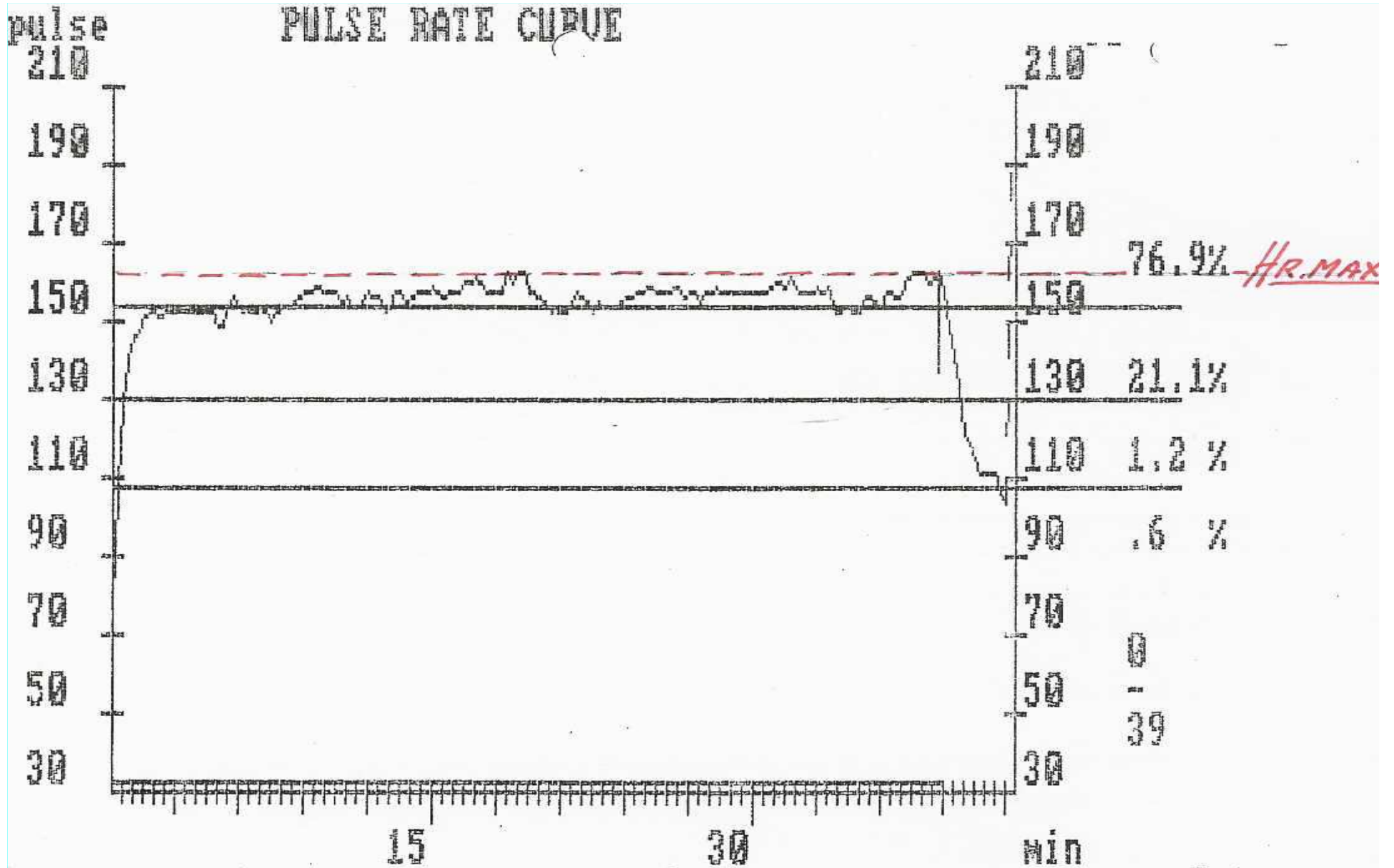
<b>Eyes/Ears:</b>	<b>2</b>	<b>7</b>
<b>Heart ( Arrhythmias/Angina pect.)</b>	<b>1</b>	<b>5</b>
<b>High Cholesterol:</b>	<b>3</b>	<b>3</b>
<b>Asthma/COPD:</b>	<b>1</b>	<b>3</b>
<b>Stomach/Intestines:</b>	<b>2</b>	<b>1</b>
<b>Stroke:</b>	<b>0</b>	<b>1</b>

## Other Sport Activities:

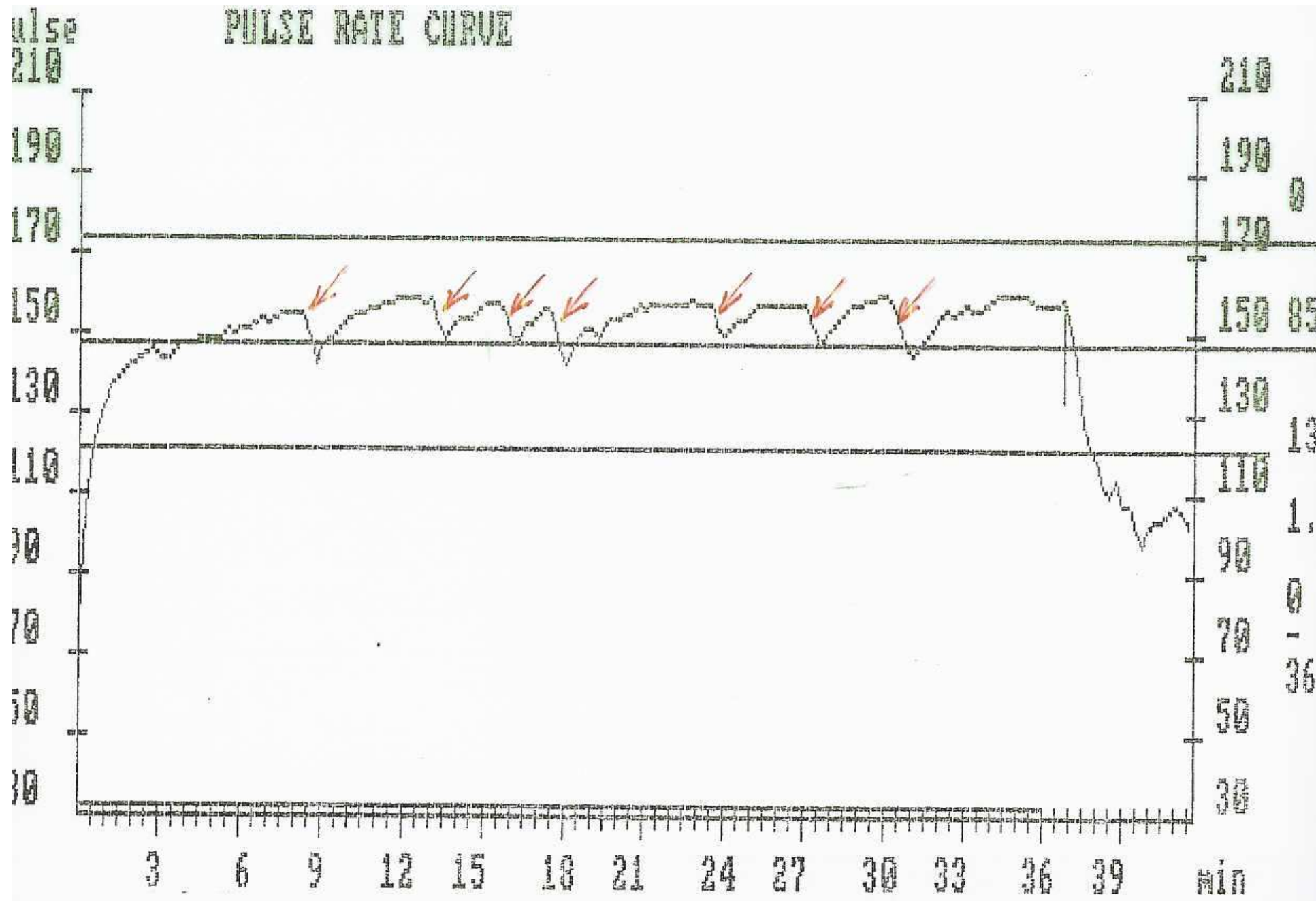
Women

Men

<b>Walking:</b>	<b>3</b>	<b>13</b>
<b>Cycling:</b>	<b>3</b>	<b>12</b>
<b>Fitness:</b>	<b>11</b>	<b>3</b>
<b>Tennis:</b>	<b>5</b>	<b>4</b>
<b>Swimming:</b>	<b>1</b>	<b>3</b>
<b>Skating/Skeelering:</b>	<b>1</b>	<b>1</b>



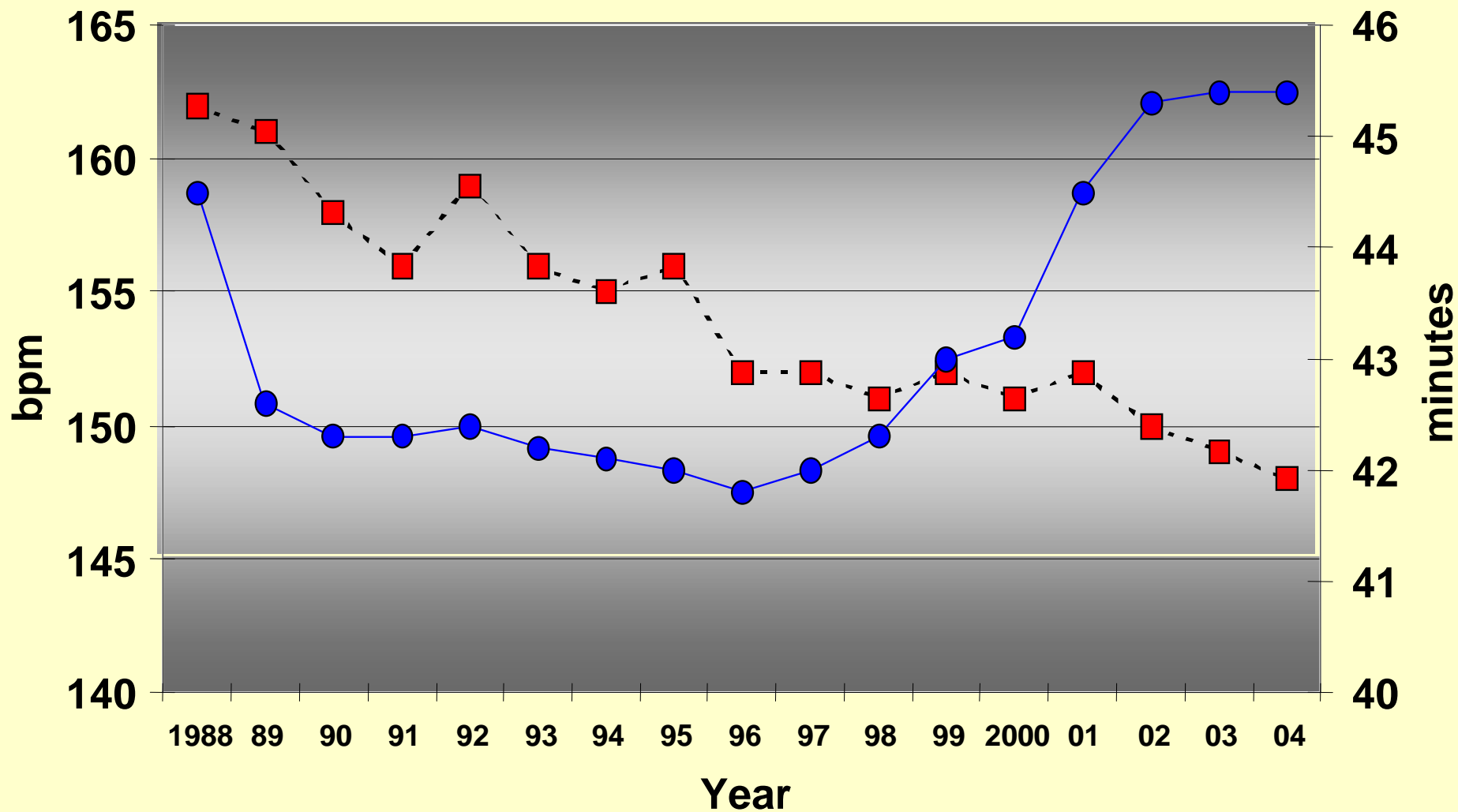
Subject **D.L. (HUF)**, Man, **68** years.  
**Average Heartrate = 155 bpm. HeartrateMax = 161 bpm.**  
**Running time: 39 minutes.**



Subject P.A.(HUF), Man, 46 years  
 Average Heartrate = 151 bpm. HeartrateMax = 160 bpm.

# Endurance Run ( 8.4 km ) Aver.Hr + Aver.Time per year

Total: 850 runs



---■--- Aver.Hr.(bpm)    ●--- Aver.Time(min)

J.A.Vos,2005

# Conclusions:

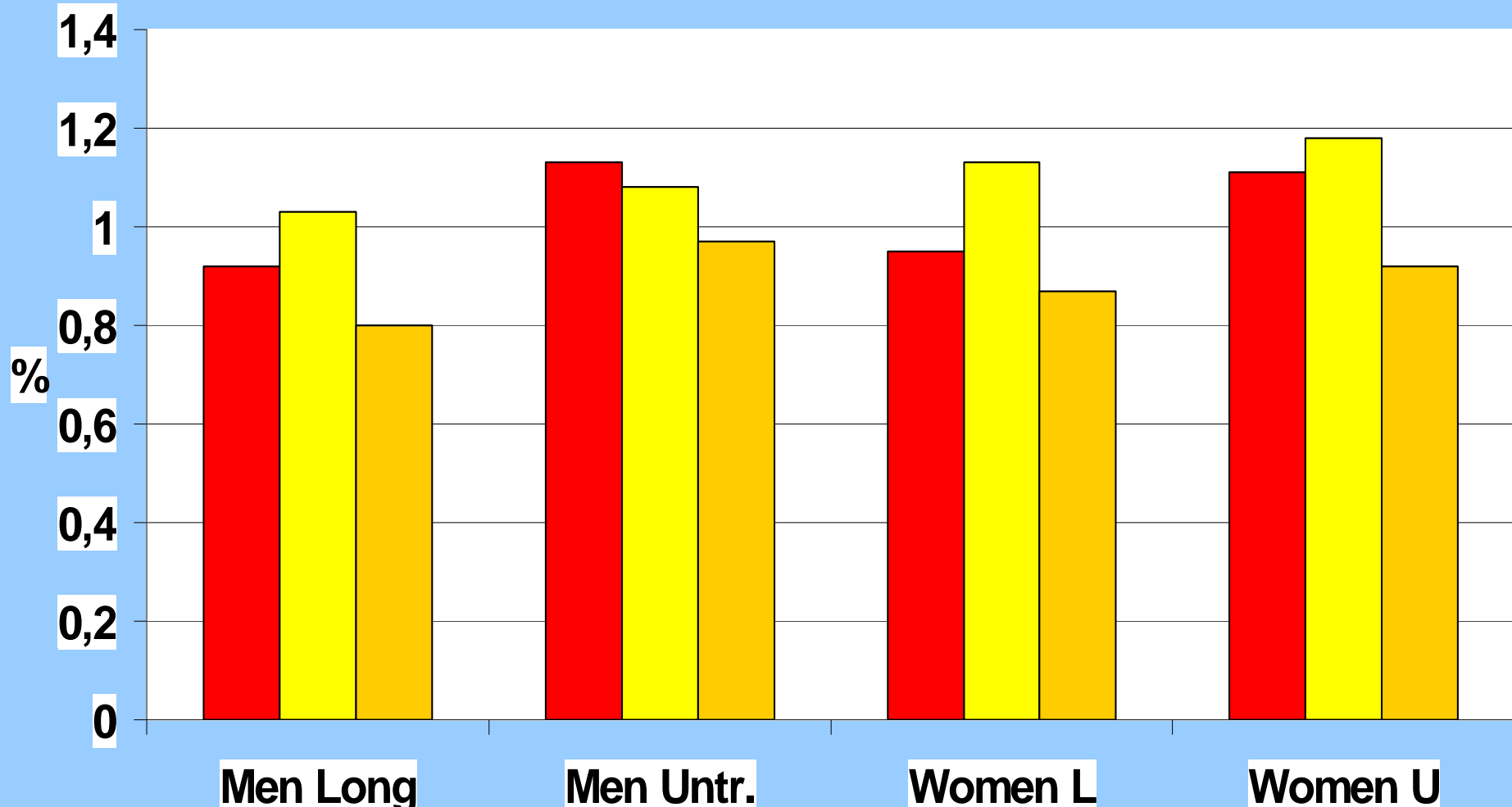
- 1. Main Motives for Recreation Sports activities are:  
*A. Fun to be active and moving. B. Health motive and C. Social contact.*
- 2. Main reasons training omission: A. Injury.  
B. Illness. C. No time; work.
- 3. VO<sub>2</sub>max ( L.min; ml.kg.min and ml.kgffm.min) declines in **Longitudinal Men** Groups: 0,92 % ; 1,03 % and 0,80 % per year between 27 and 65 years of age; in **Untrained Men** resp. 1,13 %; 1,08 % and 0,97 % per year

# Conclusions.....

- **VO2max** ( L.min; ml.kg.min and ml.kgffm.min) declines in **Longitudinal Women** Groups: 0,95 % ; 1,13 % and 0,87 % per year between 27 and 65 years of age; in **Untrained Women** resp. 1,11 %; 1,18 % and 0,92 % per year.
- 4. **Percentage Body Fat** (%) inclines in **Longitudinal Men** Groups: 1,71 % per year between 27 and 65 years of age; in **Untrained Men** 1,13 % per year.

**M+W Longitudinal compared with M+W Untrained  
VO2max decline in % per year between 27 and 65  
years of age**

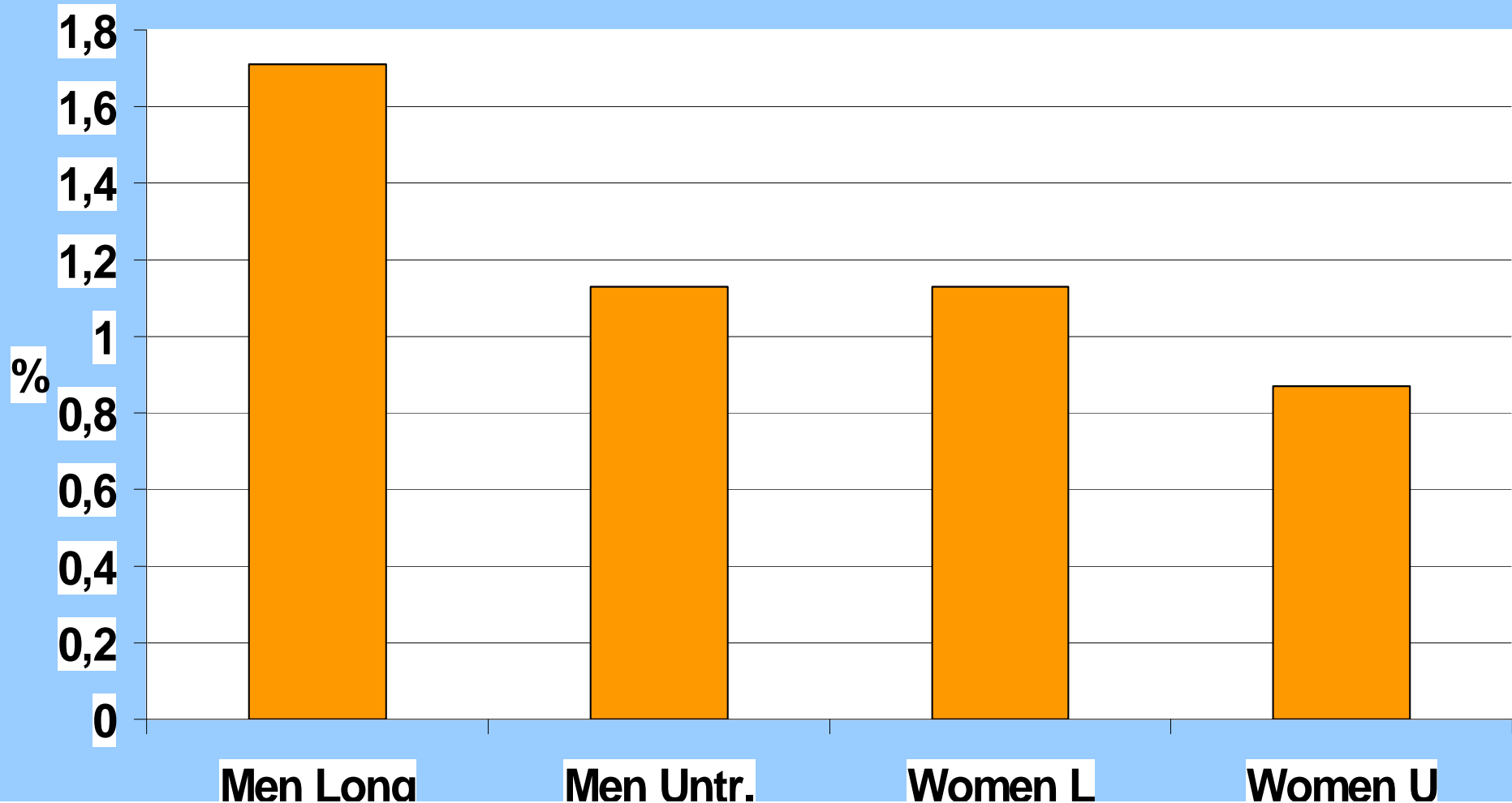
■ L.min ■ ml.kg.min ■ ml.kgffm.min

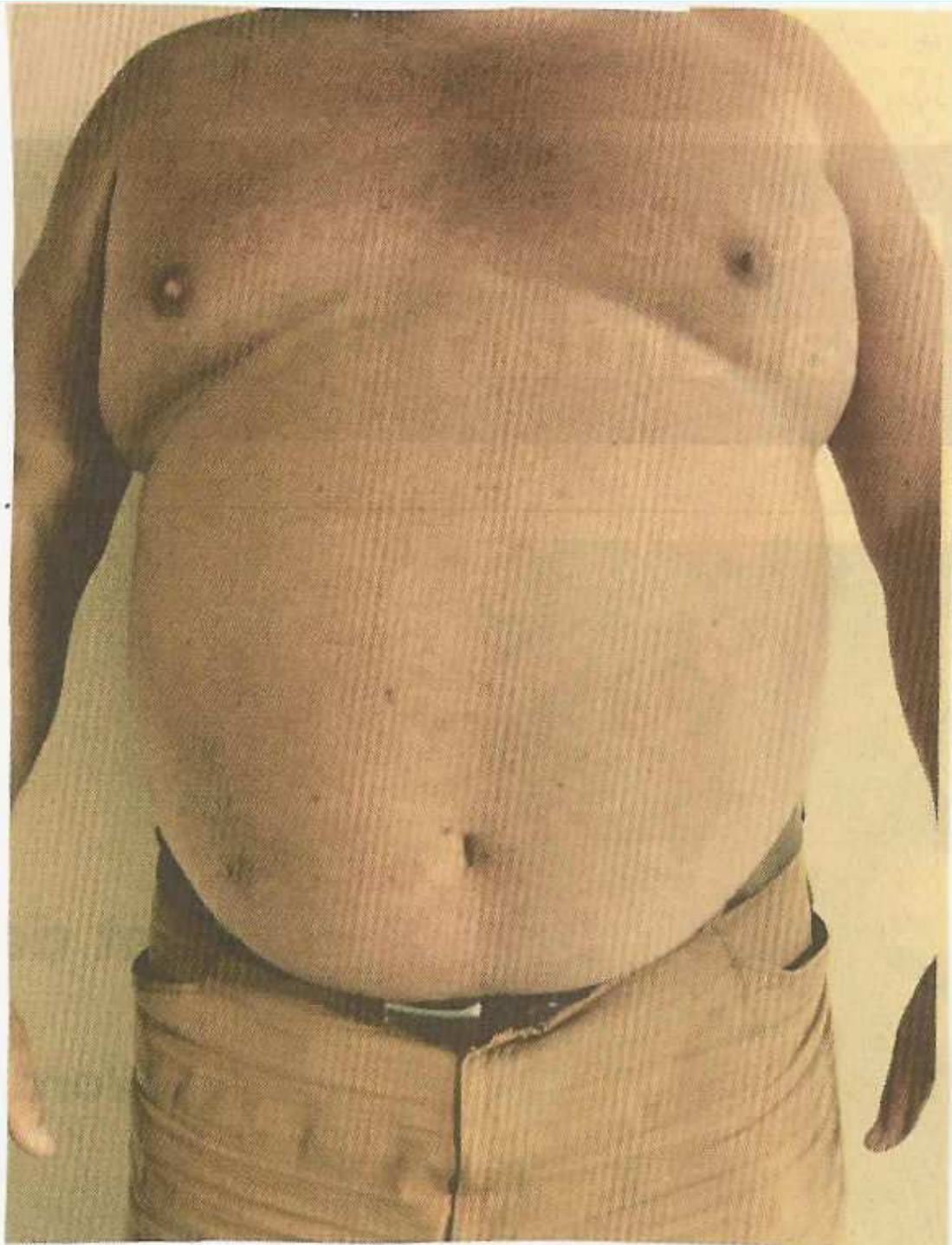




**M+W Longitudinal compared with M+W Untrained for Percentage Fat (%) incline in % per year between 27 and 65 years of age**

■ Percentage Fat



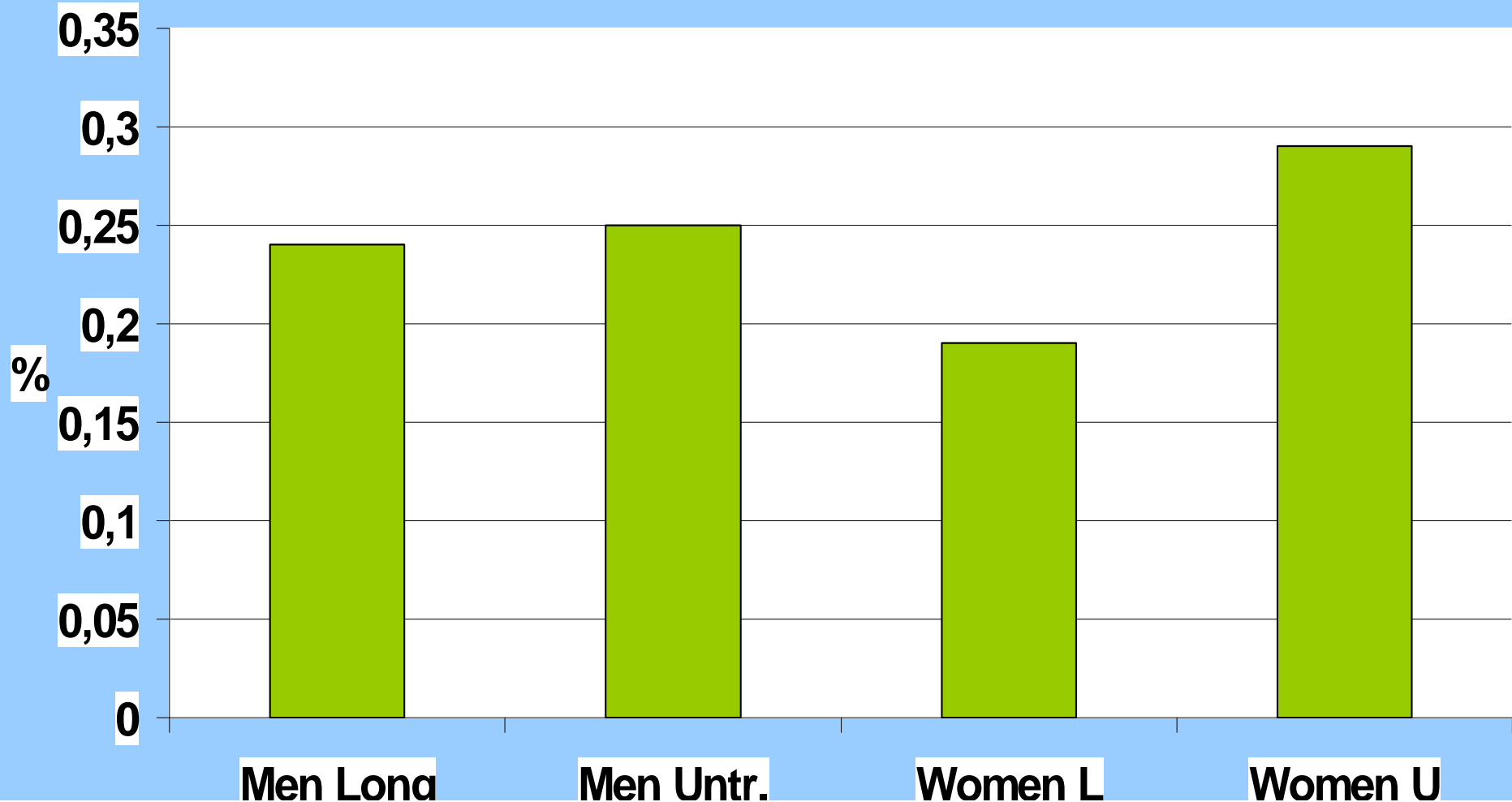


# Conclusions.....

- 5. Percentage Body Fat (%) inclines in **Longitudinal Women** Groups: 1,13 % per year between 27 and 65 years of age; in **Untrained Women** 0,87 % per year.
- 6. Fat Free Mass (kg) declines in **Longitudinal Men** Groups: 0,24 % per year between 27 and 65 years of age; in **Untrained Men** 0,25 % per year.
- 7. Fat Free Mass (kg) declines in **Longitudinal Women** Groups: 0,19 % per year between 27 and 65 years of age; in **Untrained Women** 0,29 % per year.

**M+W Longitudinal compared with M+W Untrained for Fat Free Mass (kg) decline in % per year between 27 and 65 years of age**

■ Fat Free Mass (ffm) (kg)



# Conclusions.....

- 8. **Regular supervision** concerning **heart rate** monitoring ( **telemetry**) during activities recommended.
- 9. **Regular** exercise physiology **tests** were highly appreciated in all groups.
- 10. **Regular** training, **variation** in exercises, **low/average intensity** and **interval** training are key conceptions for successful training with recreation sports groups.

**With thanks to Mr. Era!**

