

# A HEALTHY LIFESTYLE IS ASSOCIATED WITH HIGHER HEART RATE VARIABILITY

D. Felber Dietrich<sup>1</sup>, U. Ackermann-Liebrich<sup>1</sup>, C. Schindler<sup>1</sup>, DR. Gold<sup>2</sup>, JC. Barthélémy<sup>3</sup>, JM. Gaspoz<sup>4</sup>.

<sup>1</sup>*Institut für Sozial- und Präventivmedizin, Universität Basel*

<sup>2</sup>*Harvard Medical School, Brigham and Women's Hospital*

<sup>3</sup>*Laboratoire de Physiologie Clinique et de l'Exercice, Université Jean Monnet, Saint-Etienne*

<sup>4</sup>*Division of Primary Care Medicine, University Hospitals, Geneva*

## Presenting Author details:

### Background

Altered heart rate variability (HRV), a measure of cardiac autonomic control, is a strong predictor of death and of nonfatal cardiovascular events. We determined the association of dietary habits and physical activity with HRV.

### Methods

SAPALDIA (Swiss Study on Air Pollution and Lung Diseases in Adults) is a cohort study with a baseline assessment in 1991. In 2001-2003, 24-hour electrocardiograms (ECG) have been recorded in a random sample of participants aged 50 and over. Subjects with recordings of less than 18 hours were excluded, leaving 1717 recordings for analyses. Blood pressure, height and weight were measured and information about cardiovascular risk factors and dietary habits was obtained during an extensive interview. The association between dietary variables and heart rate variability was analyzed by multiple regression models adjusting for sex, age, age squared, educational level, diabetes, hypertension, body mass index and physical exercise. Interaction between BMI, fruit consumption and physical exercise was investigated.

### Results

Subjects regularly eating fruit on at least 5 days per week had a 4% ( $p=0.003$ ) higher standard deviation of all normal RR intervals (SDNN) than those eating less fruit. Regular consumption of citrus fruit (-0.8%,  $p<0.001$ ) had a negative association with SDNN, while consumption of meat, fish, boiled or raw vegetables, potatoes, olive oil, milk and dairy products or vitamins showed no significant association with HRV. Obese subjects exercising regularly at least 2 hours per week and eating fruit on at least 5 days per week had a 36% ( $p<0.001$ ) higher SDNN than obese subjects not exercising regularly and eating fruit on less than 5 days per week. Obese subjects eating regularly fruit but not exercising had a 16% ( $p=0.001$ ) higher SDNN and obese subjects exercising regularly but eating little fruit had a 23% ( $p=0.001$ ) higher SDNN than sedentary obese eating little fruit. Normal weight and overweight subjects exercising at least 2 hours per week and eating fruit on at least 5 days per week had a 33% ( $p<0.001$ ) higher SDNN than sedentary obese subjects eating fruit on less than 5 days per week.

### Conclusions

Our results show that a healthy lifestyle consisting of regular fruit consumption and physical exercise is associated with positive effects on cardiac autonomic control, especially in the obese. The beneficial effect of a healthy lifestyle may be stronger than the corresponding opposite effect of obesity.