



Medical University of Graz



# LIPOMETER – Good or Bad Fat

A Unique Device for Precise Measurement of Body Fat Distribution and Risk Detection

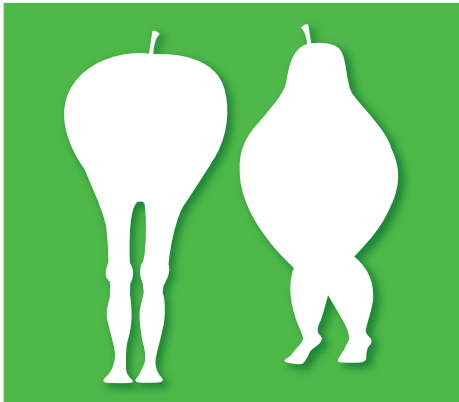
# LIPOMETER –

**A novel patented non-invasive system for measuring subcutaneous fat with high diagnostic and prognostic potential.**

Numerous international studies give evidence for the connexion of increased morbidity and mortality in case of overweight and obesity with a dramatic increase in the western world.

**Apple type  
"Android"**  
High risks  
for T2Diab, CHD

**Pear type  
"Gynoid"**  
Low risks  
for T2Diab, CHD



The same amount of fat can be distributed in different ways, leading to higher or lower risks for metabolic and hormonal disorders like Type2Diabetes (T2Diab), Coronary Heart Disease (CHD) and fertility disorders (PCOS). – **Apples are far worse than pears.**

Most devices for measuring body fat are not able to describe the individual body fat distribution precisely or even render only information of total body fat percentage at all.

The **LIPOMETER** opens a completely new scope and insight in human body composition. It is a computerised optical system for precise measurement of absolute thicknesses of subcutaneous adipose tissue in mm. Evaluation and

calibration of the LIPOMETER was done using Computed Tomography as reference.

A standardised set of 15 anatomically clearly defined body sites from 1-neck to 15-calf renders complete Subcutaneous Adipose Tissue-Topography (SAT-Top) information of individual body fat distribution. The SAT-Top profile of the measured person is like an "individual fingerprint" and is formed by genetics, sex, and is modified by age, nutritional status and lifestyle. Until today more than 20.000 healthy individuals and patients of all ages have been tested and a majority of these data have entered our statistical analyses.

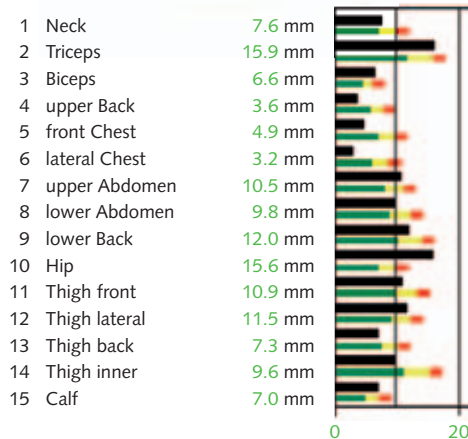
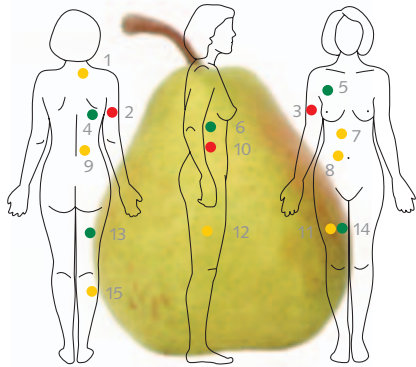


## FEMALE PEAR PROFILE

Age: 23 / Height: 173 cm / Weight: 60 kg

Calculated Total Body Fat: 25,7%

BMI: 20,8



Black bars indicate measured values. Coloured bars refer to controls in database.

Overweight is a risk for health but with the LIPOMETER it is possible to detect a risk for CHD or T2Diab even in healthy individuals: We have compared two females of same age, similar height and weight on the left and the right side. They have a similar Body Mass Index (around 21) and the calculated total body fat is also in a normal range.

Comparing the SAT-Top profile of the two females the left person has a pear profile whereas the right one has an apple profile causing a highly increased risk of obesity, CHD and T2Diab as it can be seen in the factor plot on the next page indicated by an apple and a pear. Not the body weight as a whole, but the complex situation of the metabolism should be regarded.

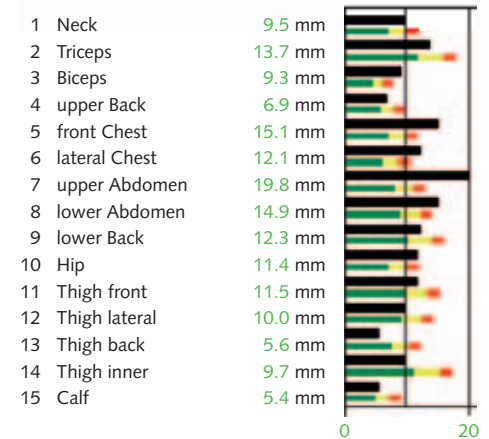
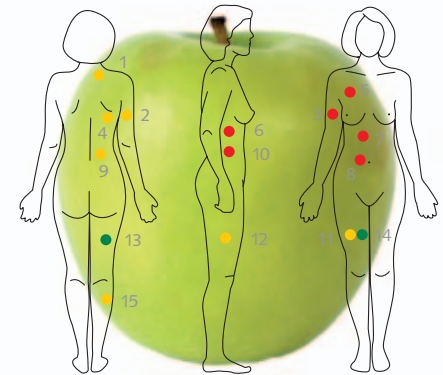
Different parts of the adipose tissue have different effects on the metabolism, it is not the mass of adipose tissue as a whole, but the body fat distribution is the only important fact.

## FEMALE APPLE PROFILE

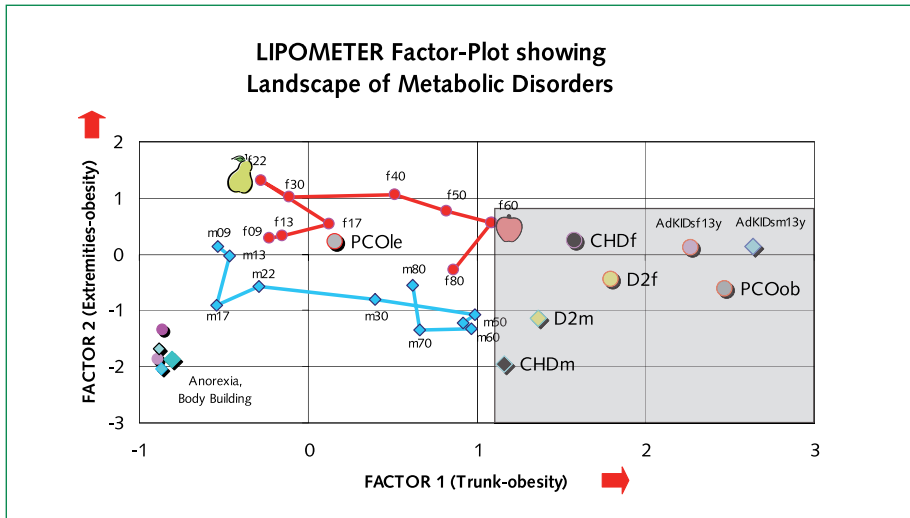
Age: 23 / Height: 172 cm / Weight: 62 kg

Calculated Total Body Fat: 29,9%

BMI: 21,0



0 20



FACTOR PLOT of diseased and controls FACTOR DEVELOPMENT in the age range. Shaded box indicates the landscape of metabolic disorders.

## DISCRIMINATION HEALTHY/ DISEASED

There are characteristic profile deformations in the case of metabolic and hormonal disorders (Type 2 Diabetes, Coronary Heart Disease, Poly Cystic

Ovary Syndrome — the most frequent fertility disorder in women). These “risk profiles” have high discriminative power for correct classification between the “normal” and “diseased” status up to more than 90%.

The LIPOMETER is an academic spin-off project of the Medical University of Graz and the Business Incubator Science Park Graz in the growing market of body composition assessment. The founder of the company and the inventor of the LIPOMETER Reinhard Moeller is an expert in biomedical research, holds several granted patents and is author of more than 60 scientific publications.



## Contact

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