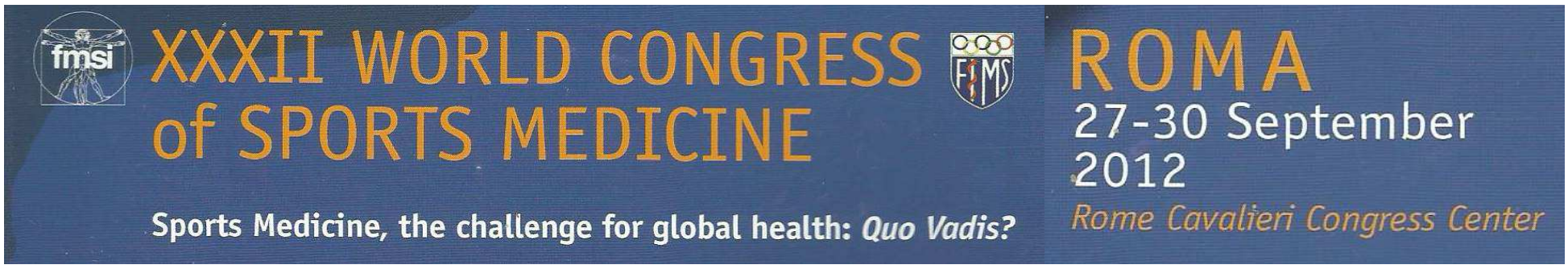

ORIGINAL METHOD TO CALCULATE SUBJECT MAXIMUM FAT OXIDATION (S.FATMAX) WITH INDIRECT CALORIMETRY

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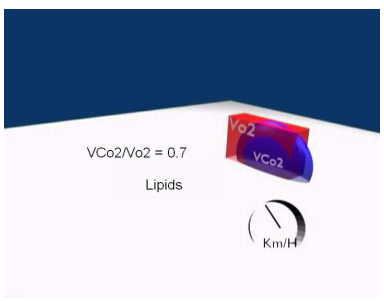
Objective: Determine the subjective maximum fat oxidation (FATMAX) using Indirect calorimetry

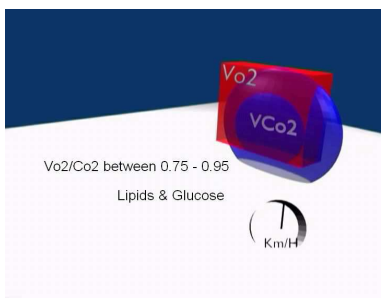
Design and method:

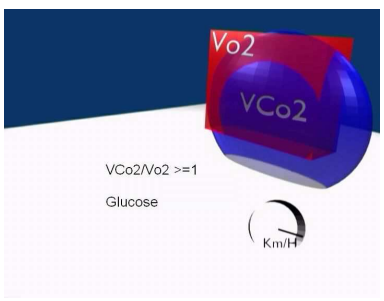
It becames clear that the value of FatMax can not be predicted on the basis of a percentage of VO2max but must be calculated directly on the subject.The distribution of lipid-carbohydrate oxidation depending on the RER is calculated using two stoichiometric formulas:

Fat (g / min) = 1.67 * VO2 - 1.67 * VCO2

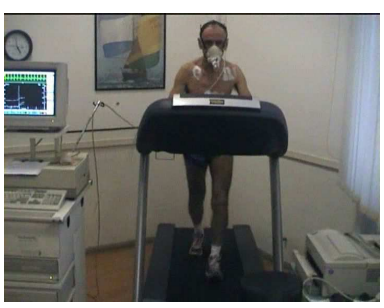
CHO (g / min) = 4.55 * VCO2 - 3.21 * VO2

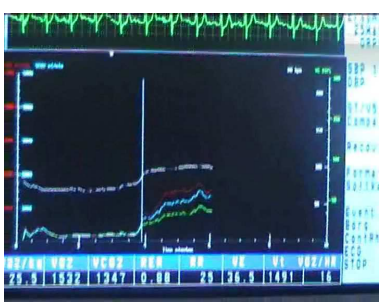




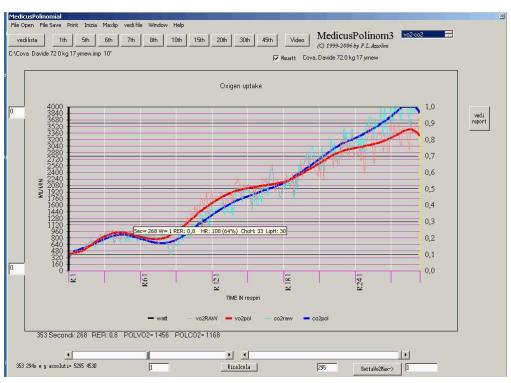


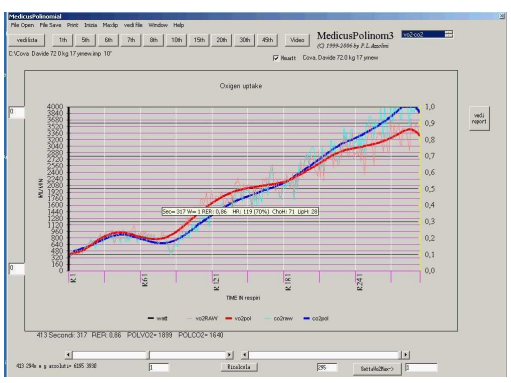
Subjects completed a progressive exercise test on a cycloergometer and RER and VO2 were registered using a Ergospirometer (Breeze). Workload was increased by 35 watt at 3 min intervals.

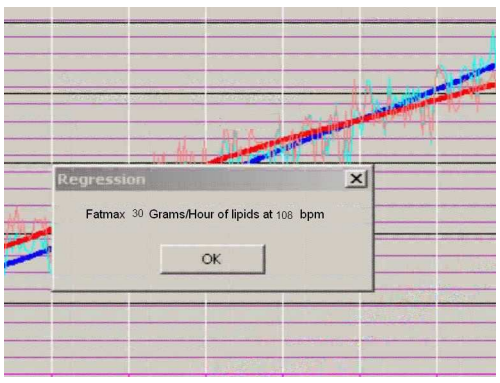




The FatMax will match the step at which occurs the most high fat consumption in absolute terms. The FatMax will be expressed in terms of workload (watts) and heart rate recorded at steady state.Through our software implementation (Polimedicus by P.L.Azzolini) the calculation of FatMax can be completely automated.







Results:

Fatmax does not coincide with the minimum value of RER recorded during the test.From a point of view the percentage of lipids is greater the more lower the RER, but the absolute value also depend on the intensity of the effort, that is, the energy requirements (VO2).

Conclusions:

Confronting fat oxidation at each work load, we can take the maximum value obtained as the actual Fatmax for the subject. As we may suspect the workload for Fatmax may change slightly or strongly in the same subject depending on his/her sedentary or training state.