VALIDATION OF JAEGER OXYCON MOBILE PORTABLE METABOLIC SYSTEM.

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INTRODUCTION
The use of portable metabolic systems has increased during field tests. Thus, the objective of this study was to carry out a validation of Jaeger Oxycon Mobile (OM) portable metabolic system, taking as gold standard the automated metabolic system Jaeger Oxycon Pro (OP), which validity has been demonstrated previously (1).

MATERIAL AND METHODS
Six subjects participated voluntarily in the study. The experimental protocol consisted of two incremental tests on a treadmill with a stepped protocol (2 min for each step) between 11 and 17 Km/h. One or other system was used in each test, in random order, and tests were carried out with one day rest among them. During each step of speed, data for VO₂, VCO₂, VE and RER were averaged every 15 seconds for its later analysis.

The differences in the measures for VO₂, VCO₂, VE and RER were evaluated with a tStudent test for related samples. To check the validity for OM, Bland and Altman’s procedure were followed (2). The significance level was fixed at p<0.05.

RESULTS
All subjects reached a maximum speed of 17 Km/h in both tests, what confirms its reproductibility. The comparision of means showed significant differences for VO₂ between 12 and 17 Km/h when both systems were compared. In the same way, significant differences were observed for RER in all speeds except at 11 Km/h. VCO₂ showed a tendency to be overestimated by OM, but significant differences were not observed. Likewise, VE didn’t show significant differences for any speed.

Bias for VO₂ and RER were 411,65 ± 267,5 ml/min and -0,12 ± 0,06 respectively when data were treated in all. These differences represented a mean error of 8,9 and 12% respectively. For VCO₂ and VE, bias were lower, -39,43 ± 212,6 ml/min and -1,26 ± 8,46 L/min.

DISCUSSION
The main result of this study showed a OM systematic error in the measurement of VO₂ and RER. Since VE didn’t show significant differences in any case, we can assume that the Triple V® (i. e. volume measurement) makes correct and reliable measures, so the differences found for VO₂ could be related with to the different methods used in both devices (3).

Our results are consistent with those presented by Perret and Mueller (3), but our bias are larger. This disagreement can be due to the differences in the ergometer used, treadmill in our case.

Thus, we conclude that OM makes systematic errors that could be corrected with regression analysis to obtain comparable measurements until manufacturer improve software and hardware.

REFERENCES

Keywords: Oxygen Consumption, Running, Accuracy/Consistency