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Daily Diet and Physical Activity Profiles in Young Normal-and Overweight Men measured by the WellBeNet Scientific Application

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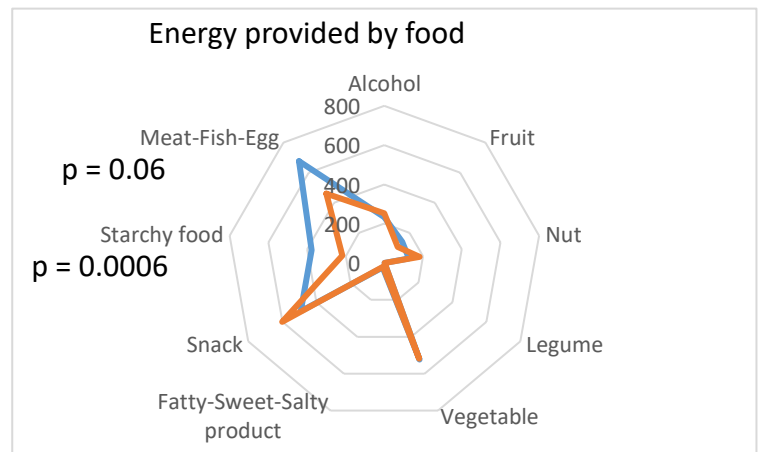
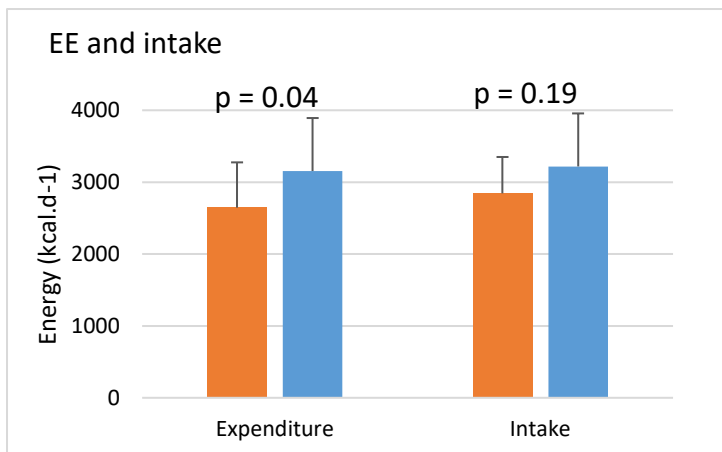
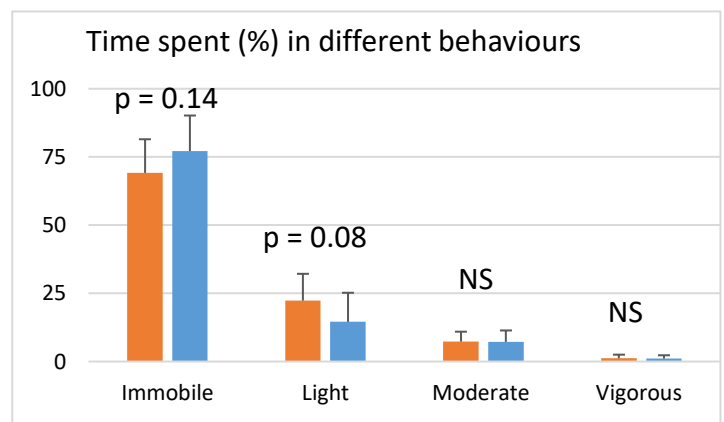
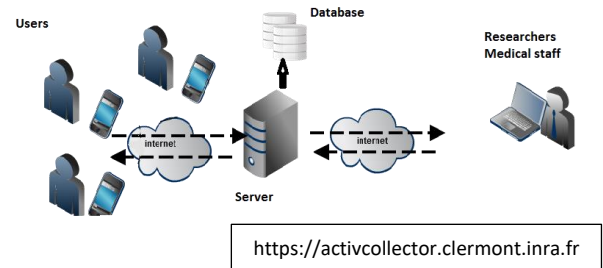
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Context The link between the lack of physical activity, unbalanced diet and health is well demonstrated. However, the effects of these behaviors are poorly known because of the lack of objective tools to evaluate them in free-living conditions. The WellBeNet scientific application was developed to meet this need. The first part of the application was dedicated to the evaluation of physical activity level and energy expenditure (eMouve, Rousset et al., 2018, Guidoux et al., 2017) and the second one to that of the servings chosen among 12 food categories (NutriQuantic, Cissoko et al., 2015).

Aim Was to estimate energy intake of each food category by minimizing the Euclidean norm $||Ax - b||^2$ with a: the matrix of the individual food servings repartition and b: the EE. We hypothesized that EE was similar to intakes. Then we compared the sedentary and active behaviors EE and intake of **normal (NW)** or **overweight (OW)** men in free-living conditions.

Methods 24 men, 33 y old, half of them **NW** ($22.4 \pm 1.7 \text{ kg.m}^{-2}$) or **OW** ($29.4 \pm 3.5 \text{ kg.m}^{-2}$) used WellBeNet for 5 days. A one way analysis of variance was carried out to test the BMI effect on behavioral variables: time spent in sedentary and active behaviors, diet, and EE and intake estimations.

Results The **NW** men were slightly younger (30 vs 36 y), less sedentary and more active than **OW** men. While being less active, **OW** men had a higher total EE. However, EE/weight was higher in **NW** men (37.7 vs $33.3 \text{ kcal.kg}^{-1}$, $p = 0.04$). The servings were similar between the BMI groups (13.9 vs 12.7 servings.d⁻¹, $p = 0.54$) while the nutritional requirements were higher in **OW** men. The servings were likely to be under-estimated by **OW** men. The minimization of the norm $||Ax - b||^2$ indicated that energy intake was higher. Starchy food and meat-fish-egg categories provided more energy in **OW** than in **NW** men.



Conclusion The serving size might depend on individual's body weight and BMI for some food categories such as starchy foods and meat-fish-egg. The power to dispose of WellBeNet improves the indirect estimation of energy provided by the food categories. Subsequently we will explore the links between PA and food choice in other BMI groups.