Activcollector: A collaborative system to store and treat human physiological and behavioral data

Romain Guidoux, Philippe Lacomme, Sylvie Rousset

PO12

Title: ACTIVCOLLECTOR: A COLLABORATIVE SYSTEM TO STORE AND TREAT HUMAN PHYSIOLOGICAL AND BEHAVIORAL DATA

Authors and addresses: Romain Guidoux 1, Philippe Lacomme 2, Sylvie Rousset 1

1 Institut National de la Recherche Agronomique, Unité de Nutrition Humaine UMR 1019 CRNH d'Auvergne, 58 rue Montalembert, 63000 Clermont-Ferrand France
2 Université Blaise Pascal, Laboratoire d'Informatique, de Modélisation et d'Optimisation des systèmes (LIMOS) UMR CNRS 6158, Campus des Cézeaux, 63177 Aubière Cedex France

Presenting author: Sylvie Rousset

Abstract: Modern computer and electronic technologies have the potential to facilitate the collect, the centralization and the treatment of multivariate data. For this reason we have created and developed a collaborative system: ActivCollector (https://www3.clermont.inra.fr/ActivCollector/) useful and available to researchers in human nutrition. This system is not only a technological but also a research tool because it integrates the intelligence necessary to the modelling of metabolic process such as energy expenditure, for example.
This system is composed of a server, data bases and software (figure). Its architecture has been initially conceived to be opened to new developments and new users. At the present, ActivCollector contains several units necessary to :
• Project and user management. These two first units allow managing of the research projects in nutrition independently from/to each other. The user management enables to give access rights according to individual needs/functions.
• Clinical data management. Data of several sources were considered: responses to questionnaires, data acquired from monitors or e-devices (Actiheart, Armband, smartphone), data from biological, biochemical and physical analyses. Today researchers can create their own questionnaires or use the existing questionnaires in the data basis. They can also send them to volunteers by internet and schedule the automatic mathematical treatments of responses given by volunteers. We are working to the collect and treatment of data acquired by smartphone to estimate energy expenditure in free-living conditions.
• Communication between volunteers and researchers by the access of the internet (internal e-mail).
To our knowledge ActivCollector is the first system of clinical data centralization and modelling of metabolic process available for the researchers in nutrition. His evolutionary architecture will enable to build metabolism prediction models, stage by stage, to understand the development or the regression of chronic diseases such as obesity.