Real time smart monitoring of eating patterns during main meals

SPLENDID

Personalised Guide for Eating and Activity Behaviour for the Prevention of Obesity and Eating Disorders

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Karolinska Institutet

Division of Applied Neuroendocrinology

mando group

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SPLENDID is a 3-year **technological** and **scientific** project funded by the European Commission

The work leading to these results received funding from the European Community's ICT Programme under Grant Agreement No. 610746, 01/10/2013 - 30/09/20161

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SPLENDID aimed to **develop new technologies** to **monitor** how people eat and move during day

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These technologies will be used to **give advice** to the users on **how to improve** their **eating** and their **physical activity** habits

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Healthy students in schools (Sweden)

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Overweight young adults (Netherlands)

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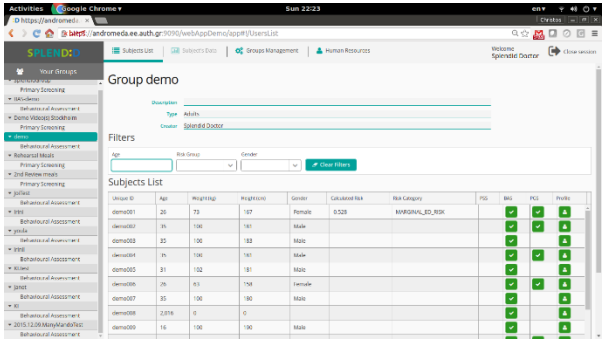
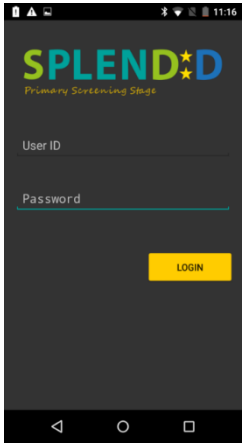
Mandometer

Activity-meter
Chewing sensor



Website(s)



Smartphone
& App

Self-rating
questions

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Primary screening stage (school only)

Behavioural assessment stage

Personalised Guidance stage

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Mandometer®

Lab

Clinic

Lab

Data pre-processing:

B2

	B	C	D
1	CODE		TIME
2			
3			
4			
5			
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7			
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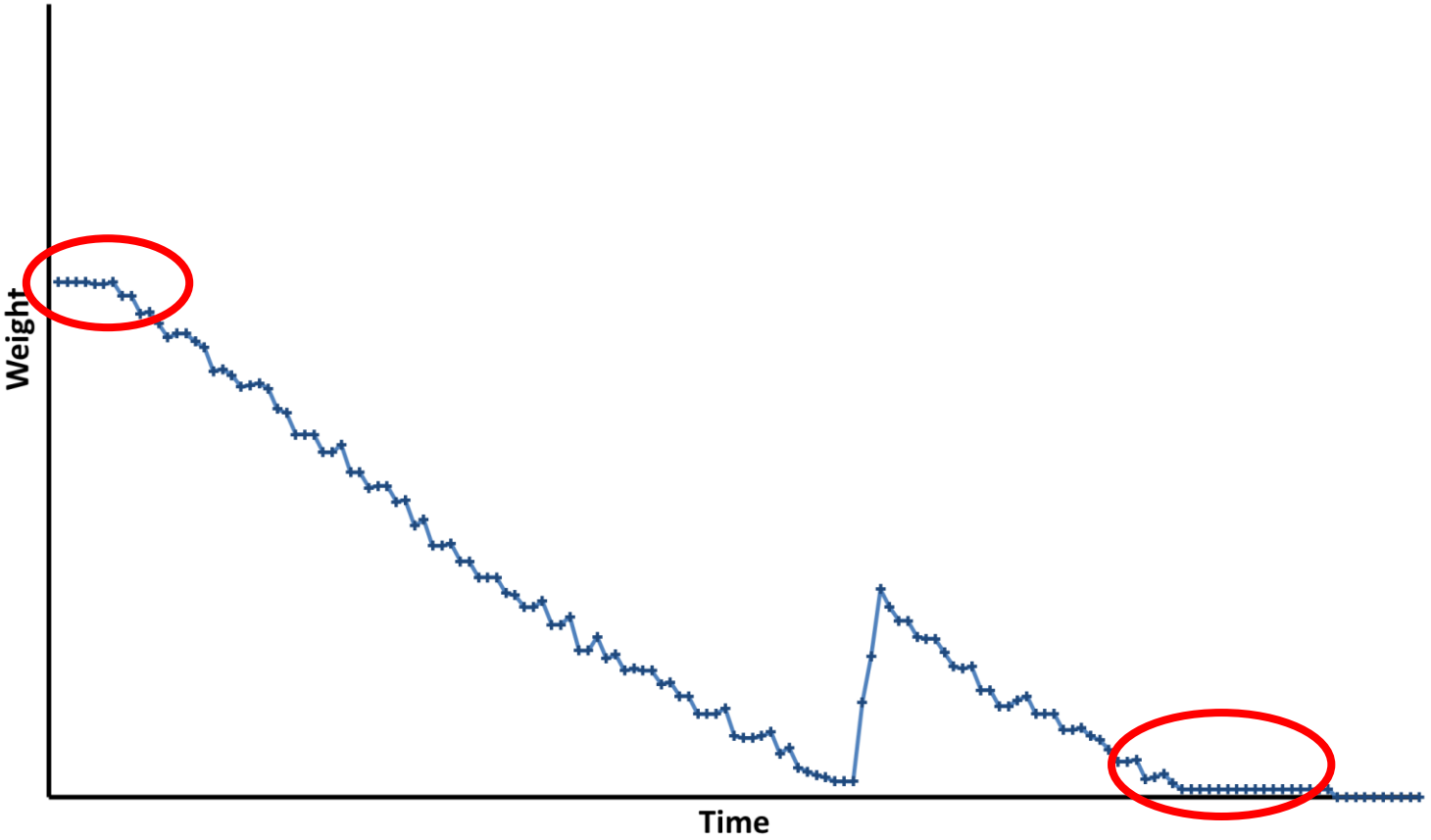
11			
12			
13			
14			
15			

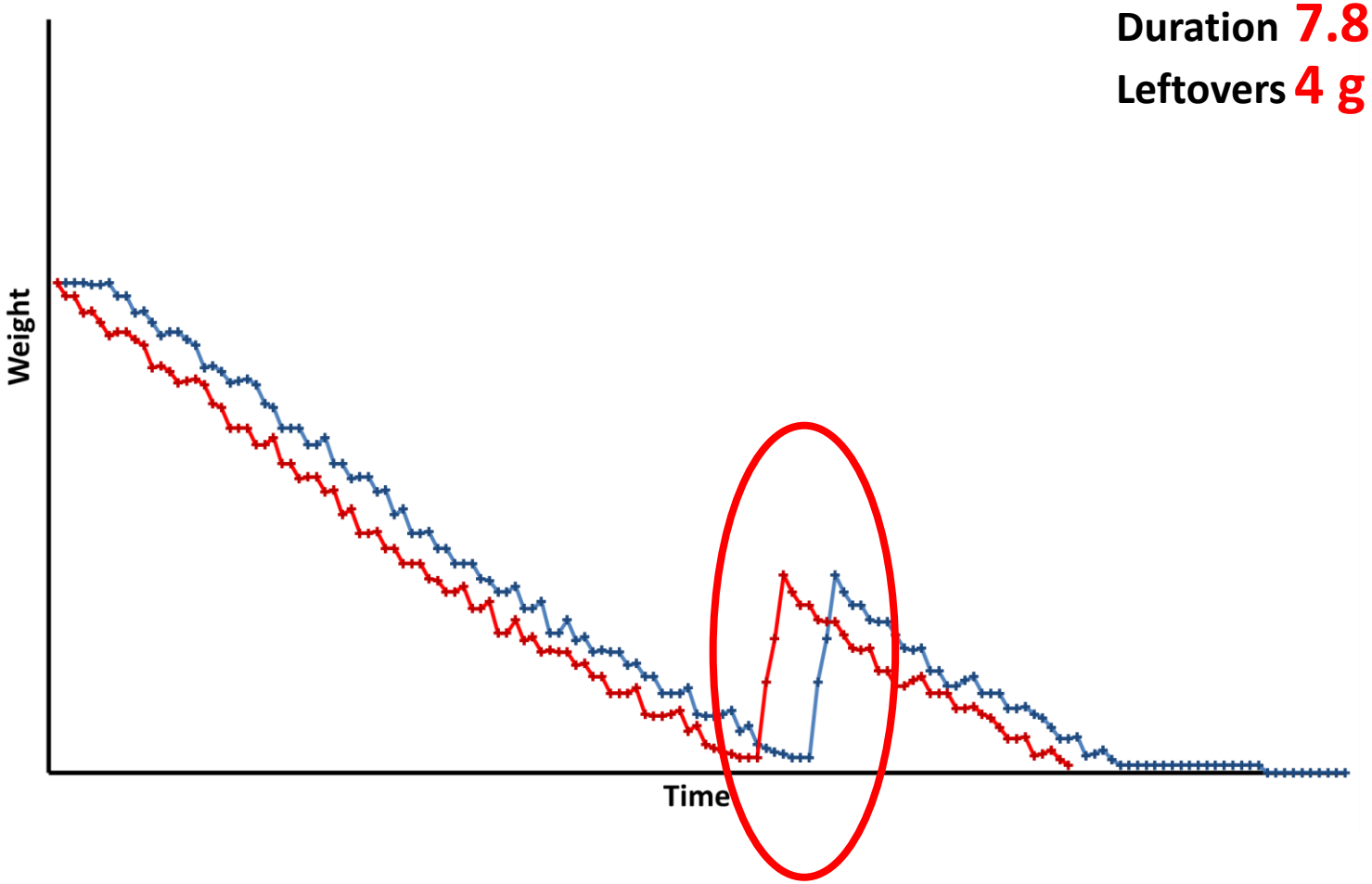
Data pre-processing: Healthy female individual, 1Hz



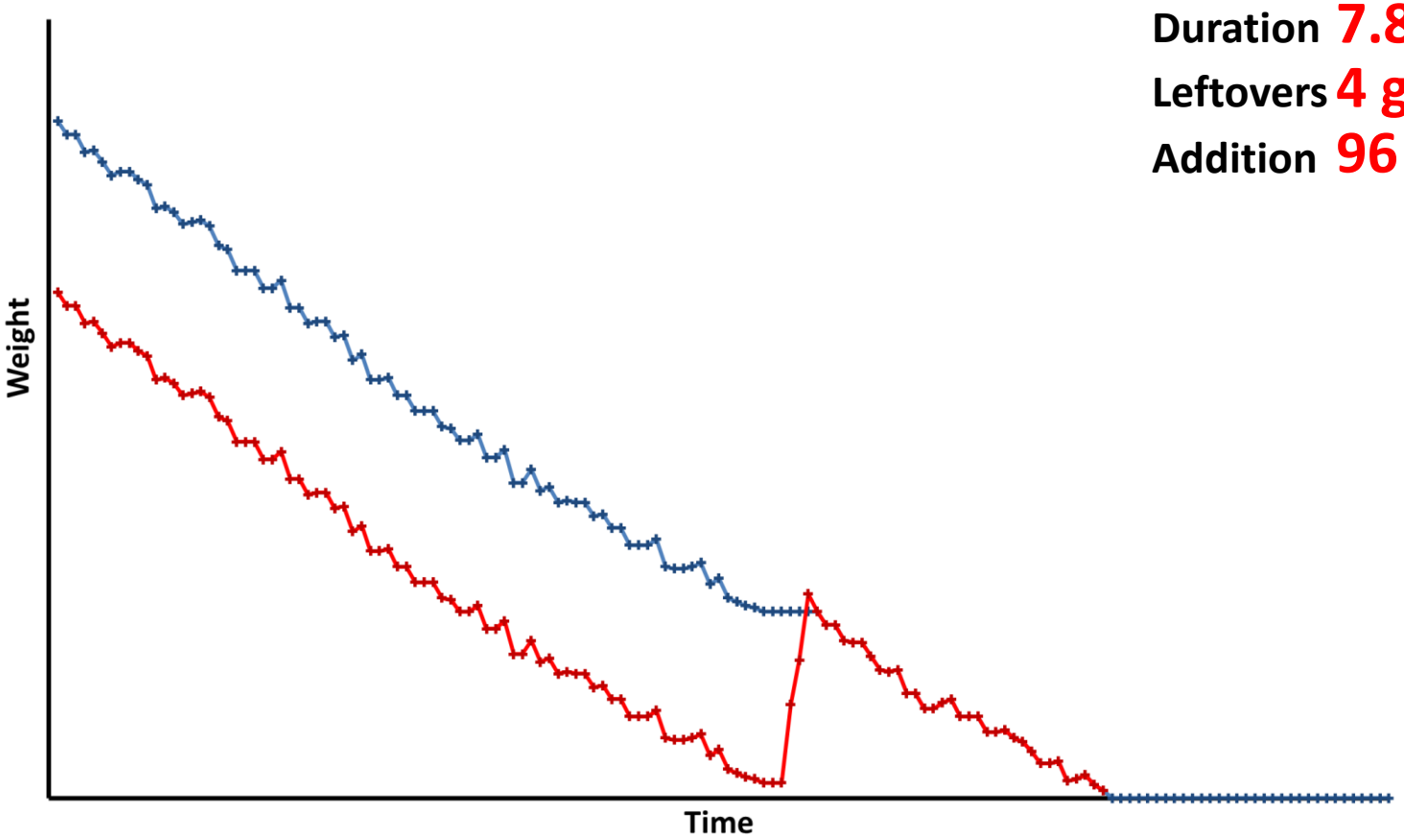
Data pre-processing: Healthy female individual, 1Hz

Duration **7.8 min**

Leftovers **4 g**

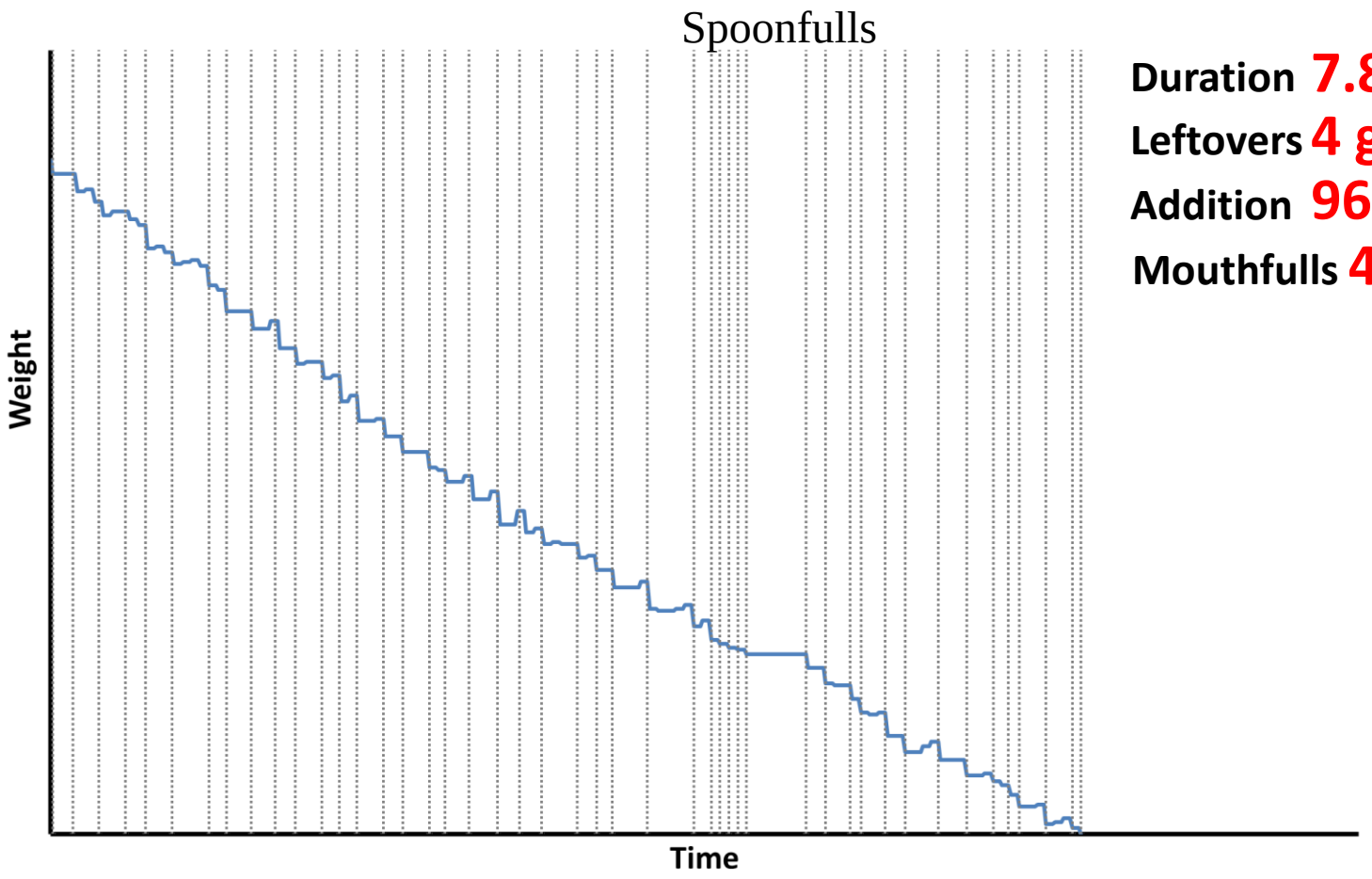


Data pre-processing: Healthy female individual, 1Hz



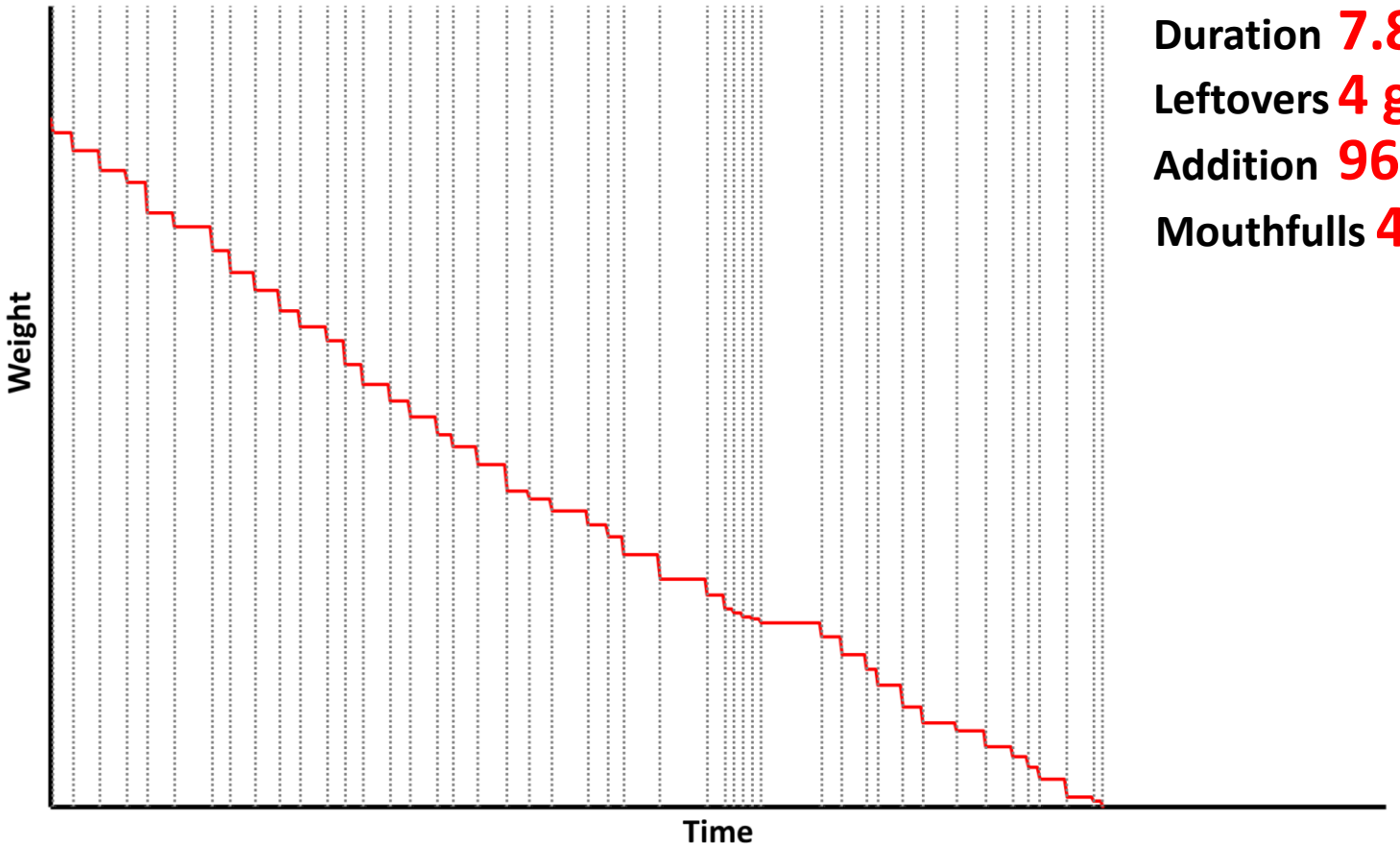
Duration **7.8 min**
Leftovers **4 g**
Addition **96 g**

Data pre-processing: Healthy female individual, 1Hz



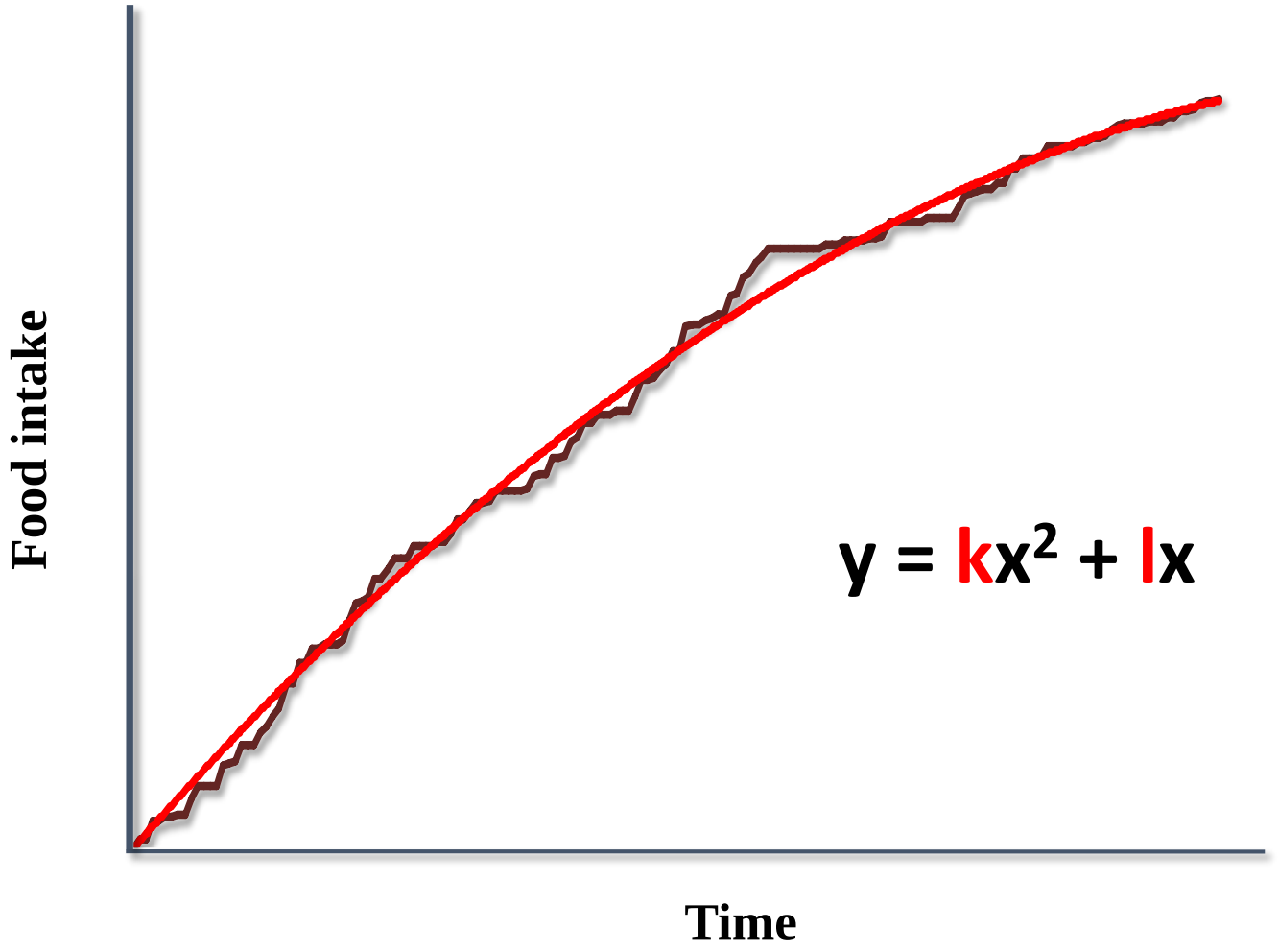
Duration 7.8 min
Leftovers 4 g
Addition 96 g
Mouthfulls 46

Data pre-processing: Healthy female individual, 1Hz

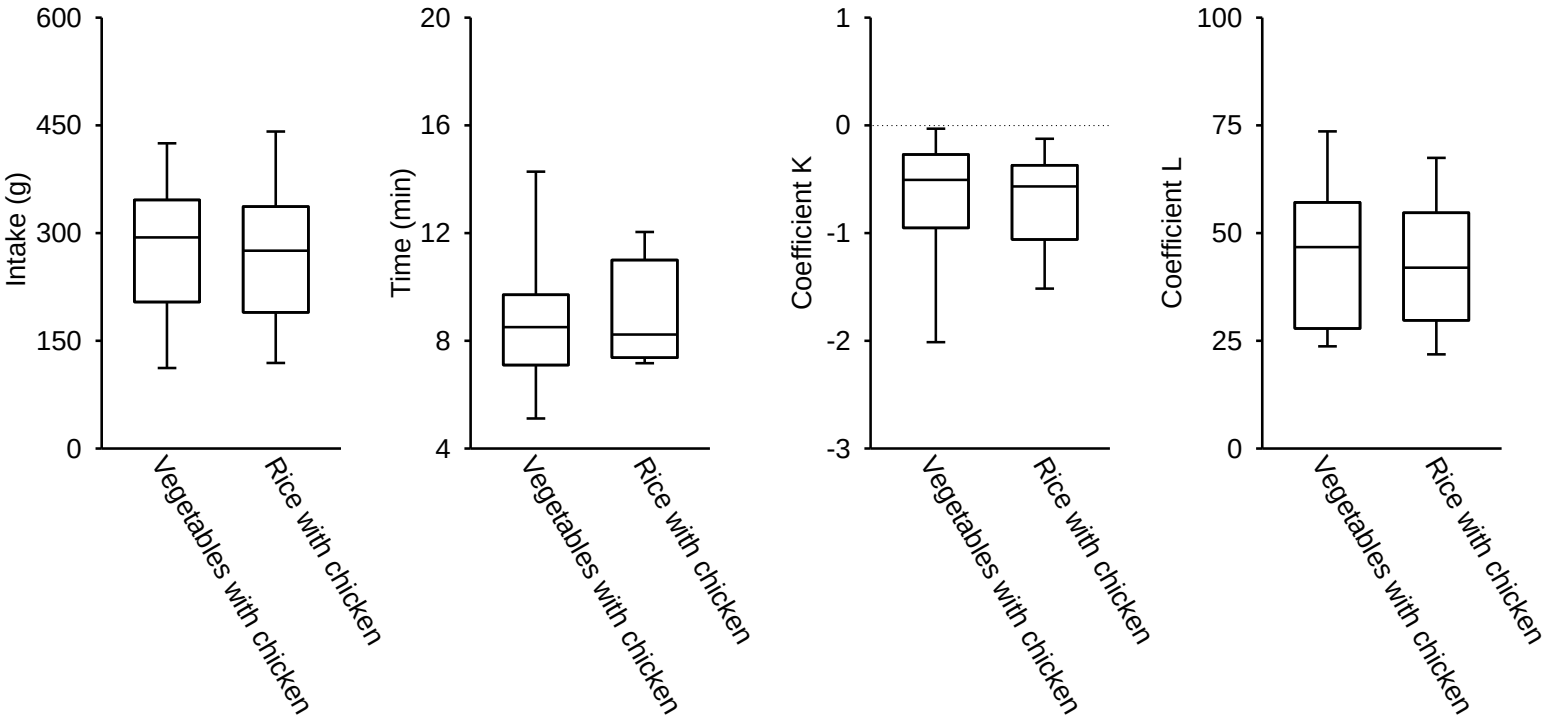


Duration **7.8 min**
Leftovers **4 g**
Addition **96 g**
Mouthfulls **46 g**

Data pre-processing: Healthy female individual, 1Hz



Group characteristics



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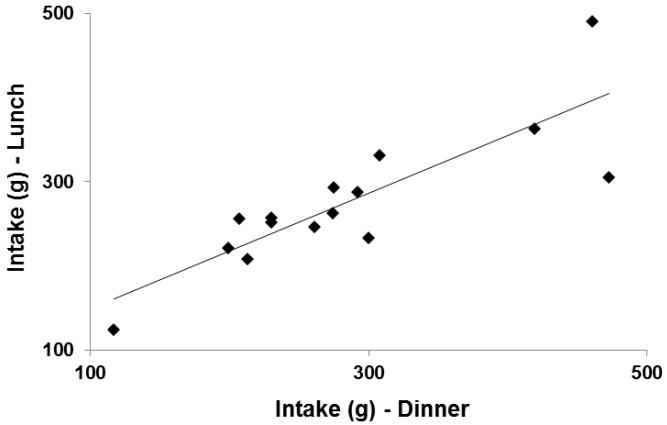
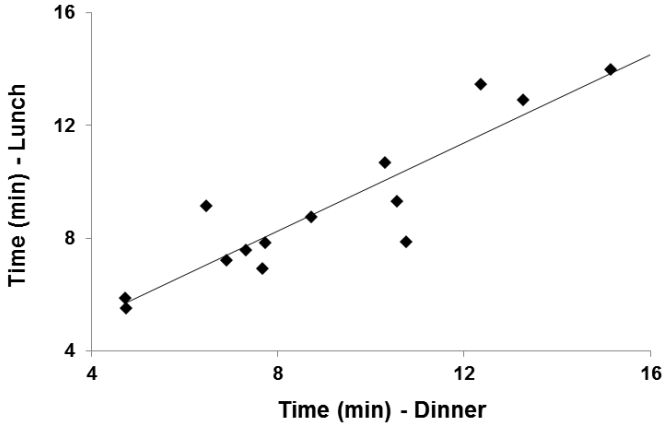
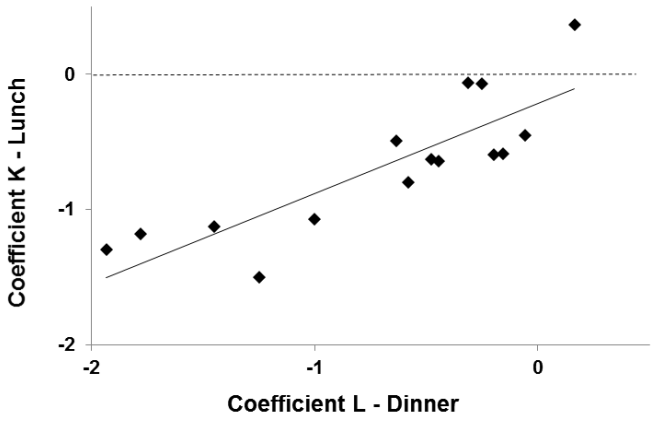
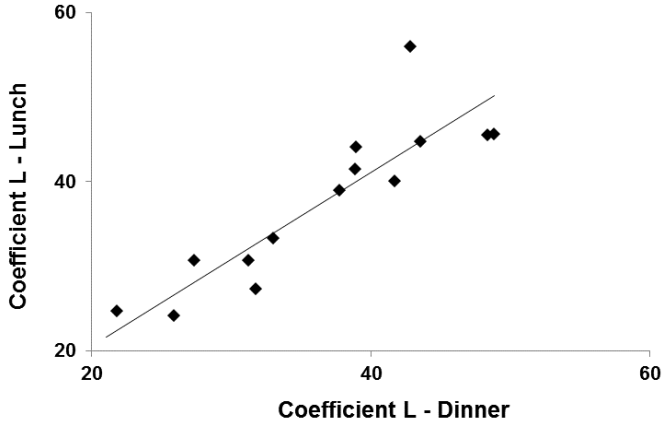
Within individuals









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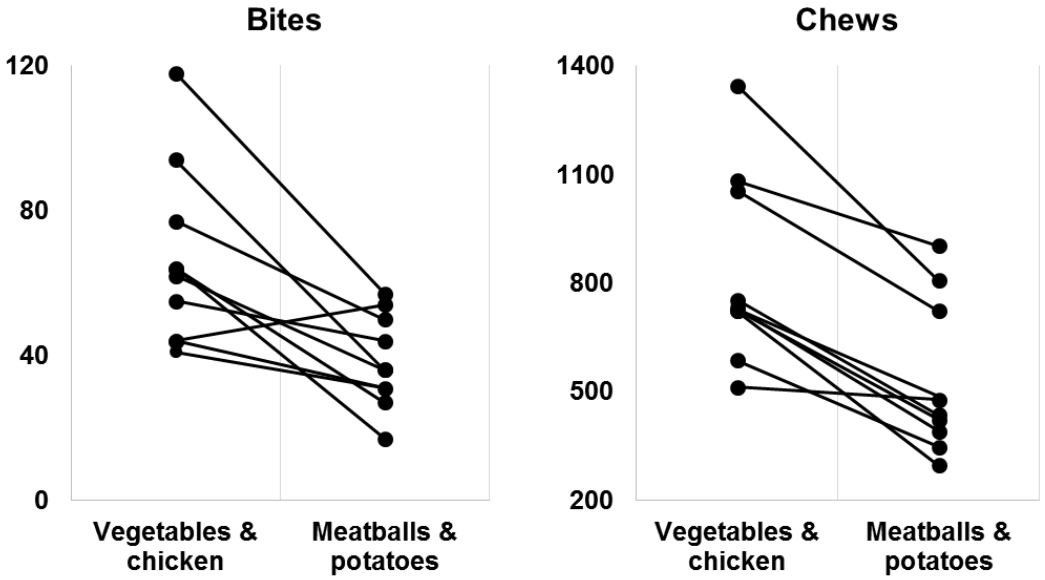
Within individuals



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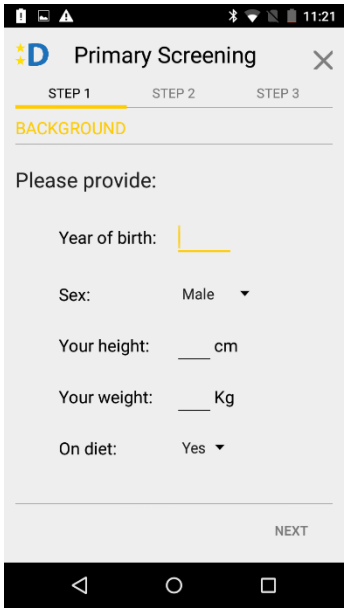
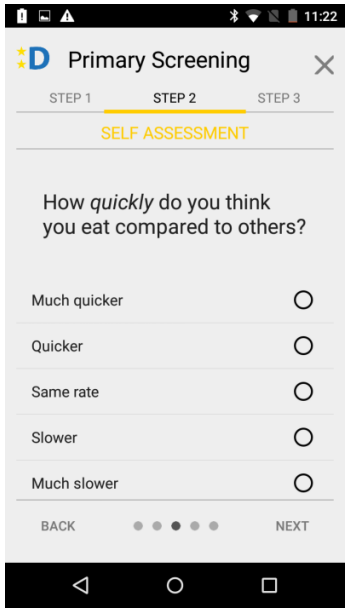
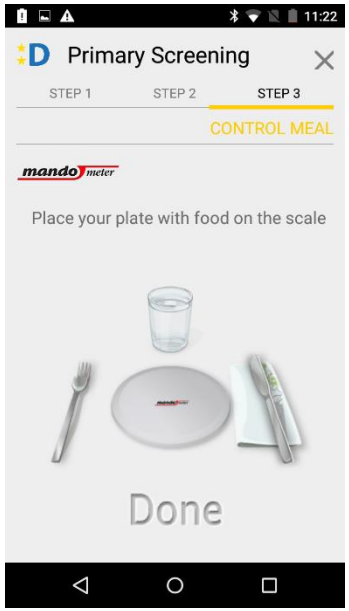
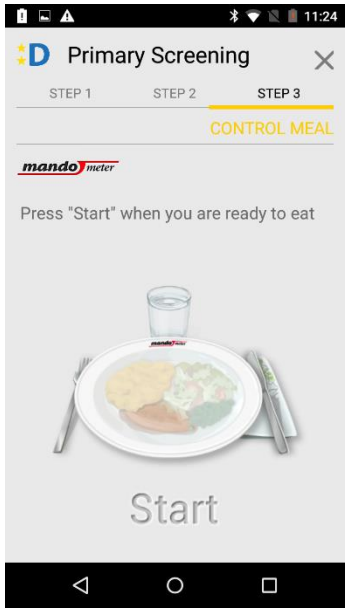
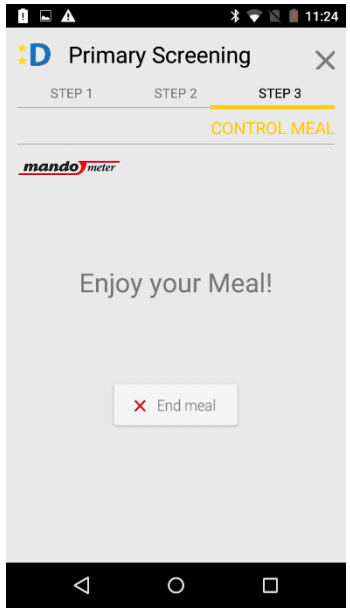
2014-2015











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2014-2015

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2014-2015 Dataset results

	Data collected
Laboratory	Good quality, 98 new + 116 old datasets
School	Good quality, 41 datasets
Young adults	Good quality, in total 39 recorded meals

Total: >290 meals

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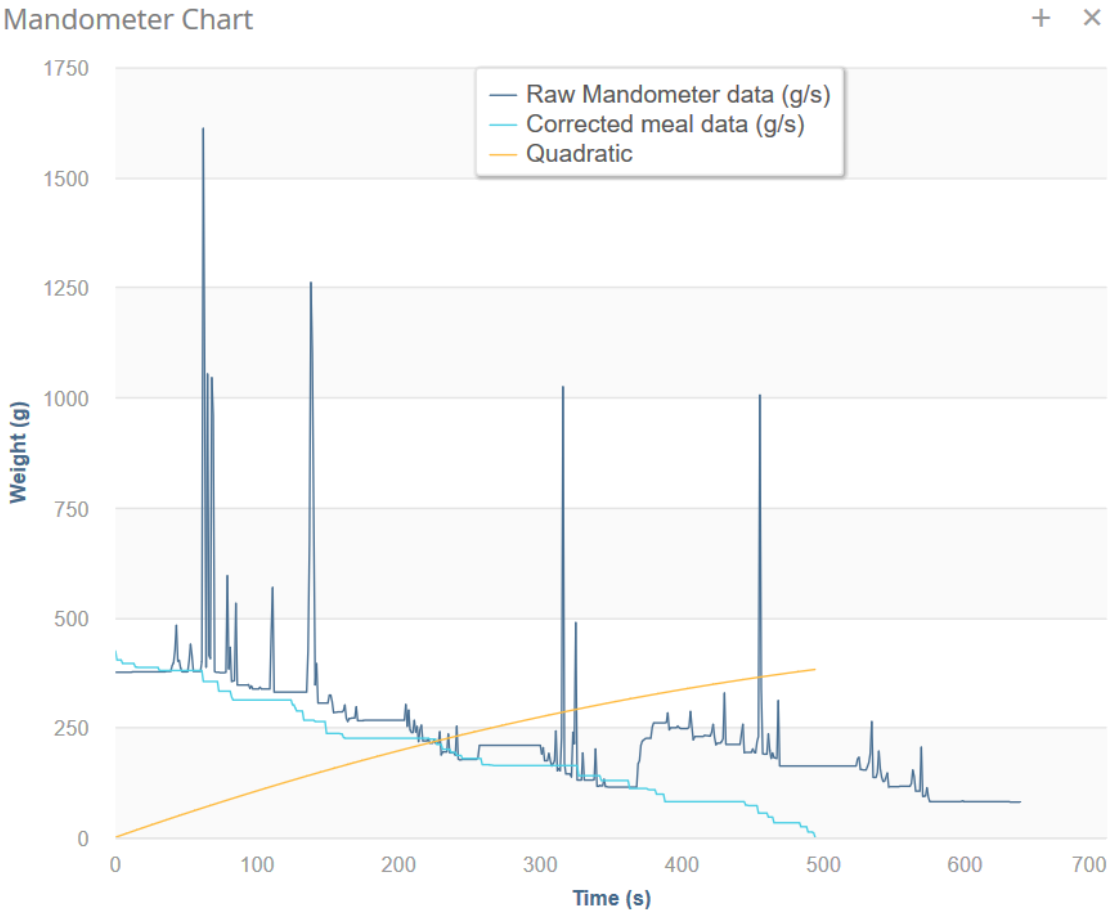

Fullness (0-100) before the meal:	9
Fullness (0-100) after the meal:	79
How much the user liked his/her food?	I liked it a lot

A parametric Probabilistic Context-Free Grammar for food intake analysis based on continuous meal weight measurements.
Papapanagiotou V, Diou C, Langlet B, Ioakimidis I, Delopoulos A.
Conf Proc IEEE Eng Med Biol Soc. 2015 Aug;2015:7853-6

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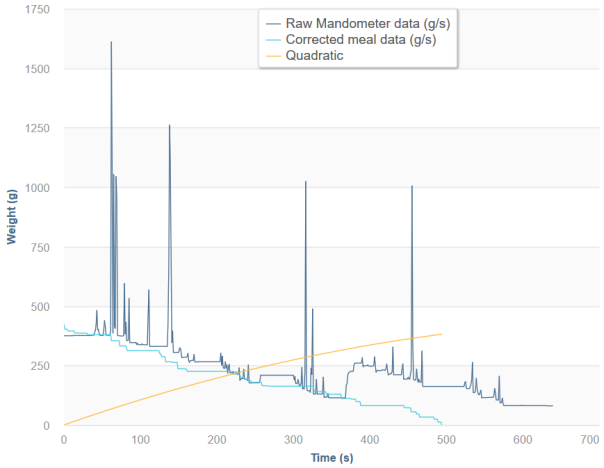
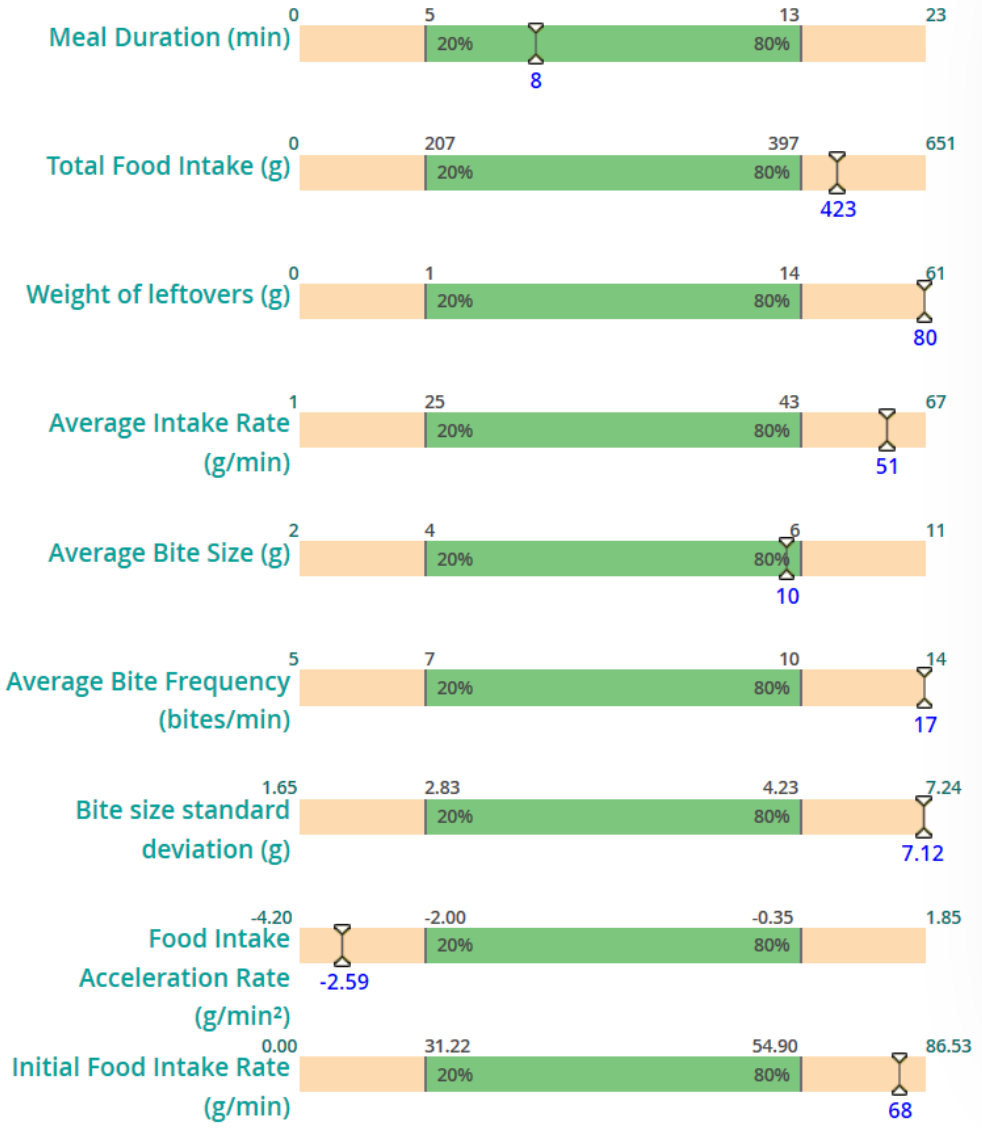
Mandometer Chart



Fullness (0-100) before the meal:	9
Fullness (0-100) after the meal:	79
How much the user liked his/her food?	I liked it a lot

Indicators



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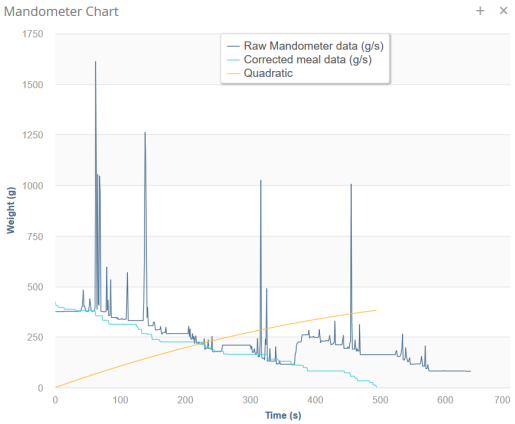
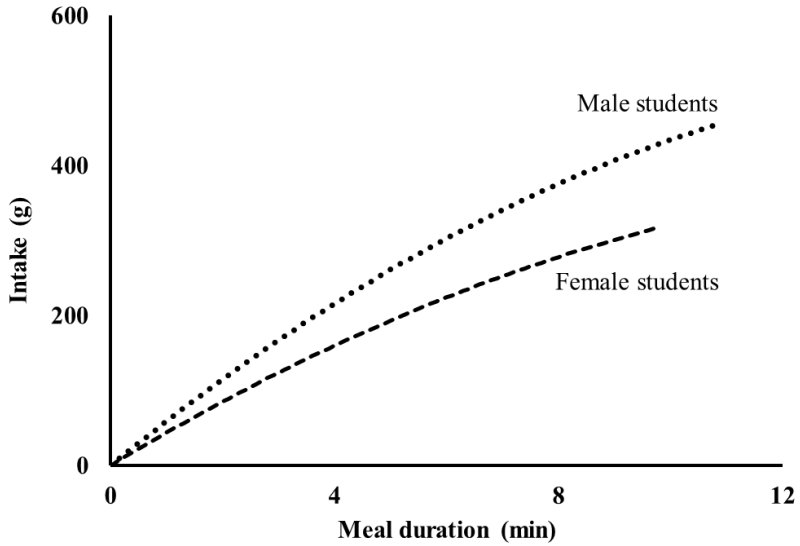
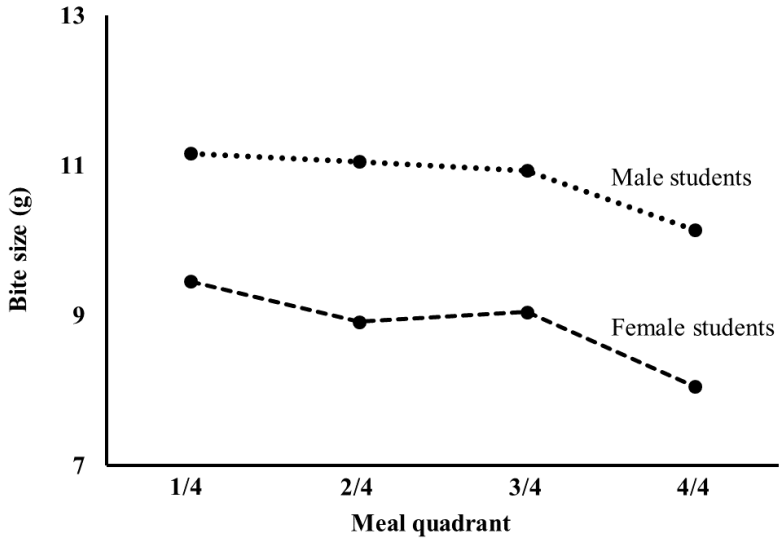

Mandometer Chart
Raw Mandometer data (g/s)
Corrected meal data (g/s)
Quadratic
Weight (g)
Time (s)
Fullness (0-100) before the meal: 9
Fullness (0-100) after the meal: 79
How much the user liked his/her food? I liked it a lot


Intake (g)
Meal duration (min)
Male students
Female students


Bite size (g)
Meal quadrant
Male students
Female students

2015-2016

2015-2016

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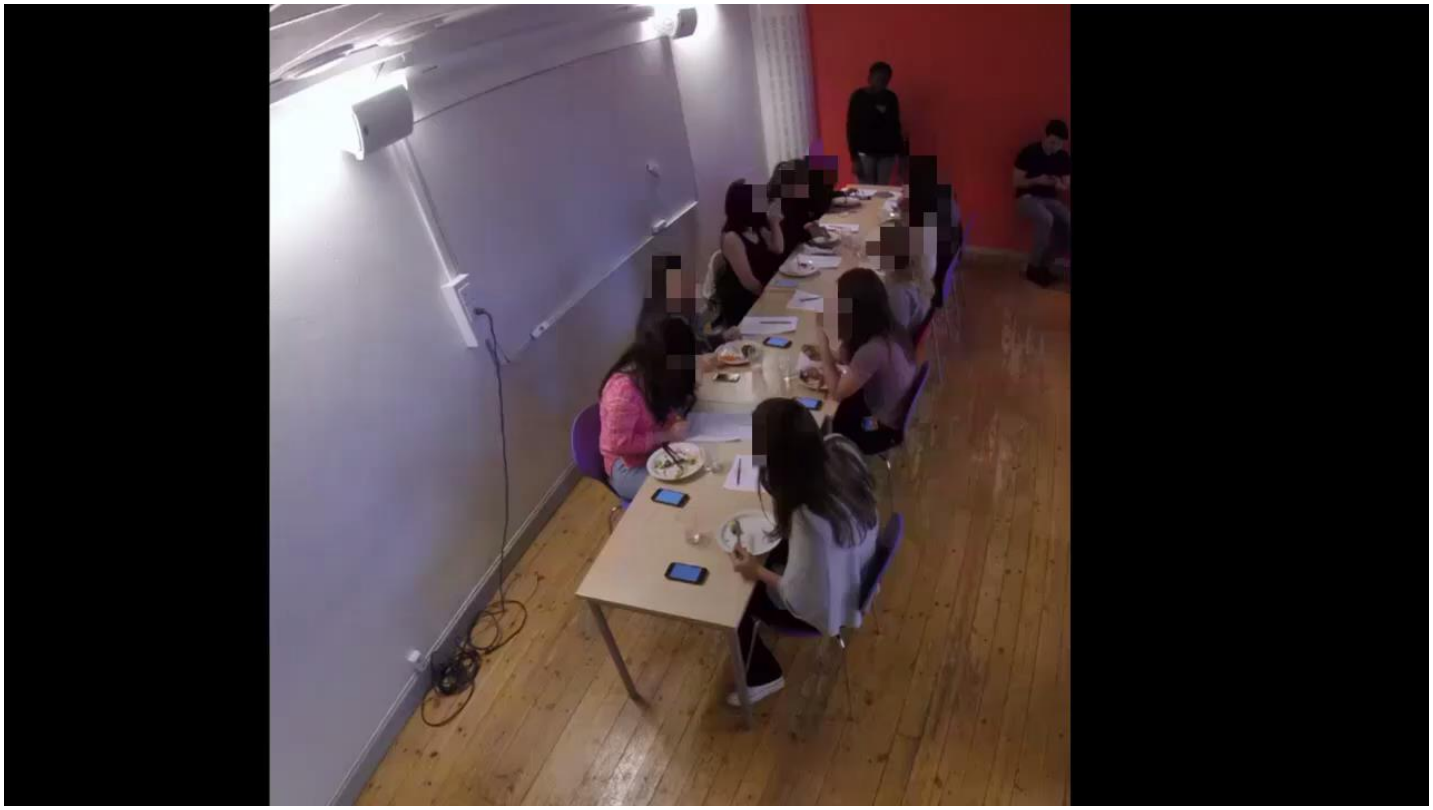
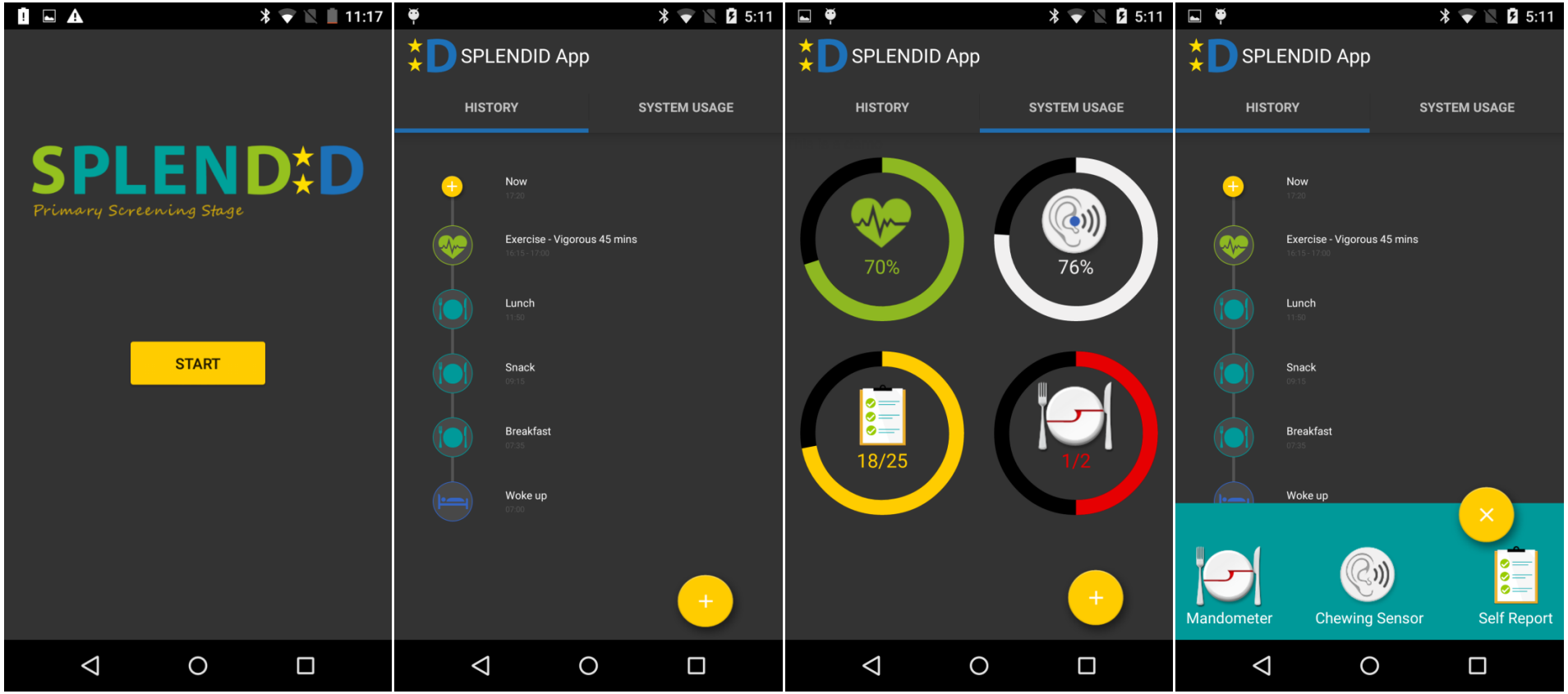
2015-2016



2015-2016 Dataset results

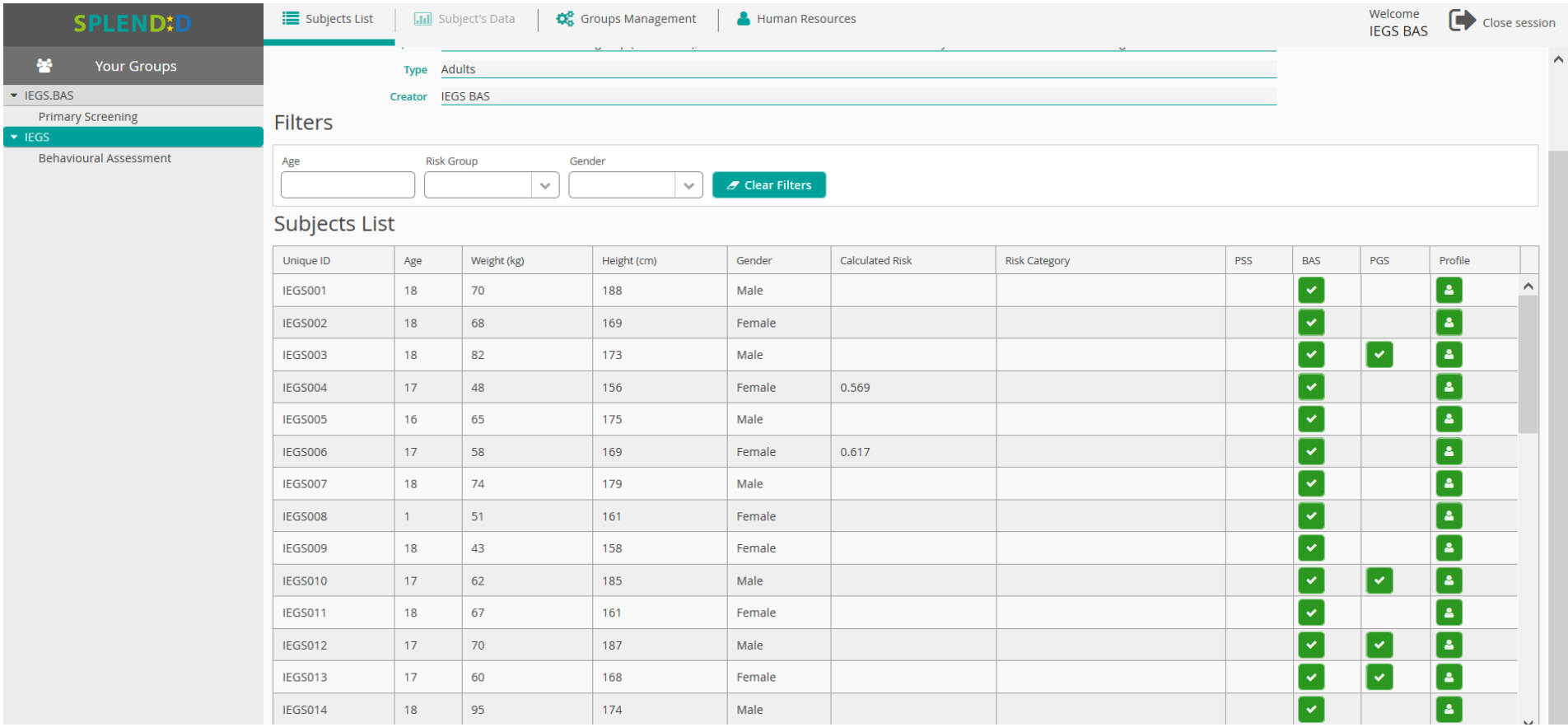
	Data collected
School	Repetition 1: Good quality, 110 datasets – 3 days/6 classes Repetition 2: Good quality, 49 datasets – 2 days/3 classes

Current progress



Current progress

Current progress



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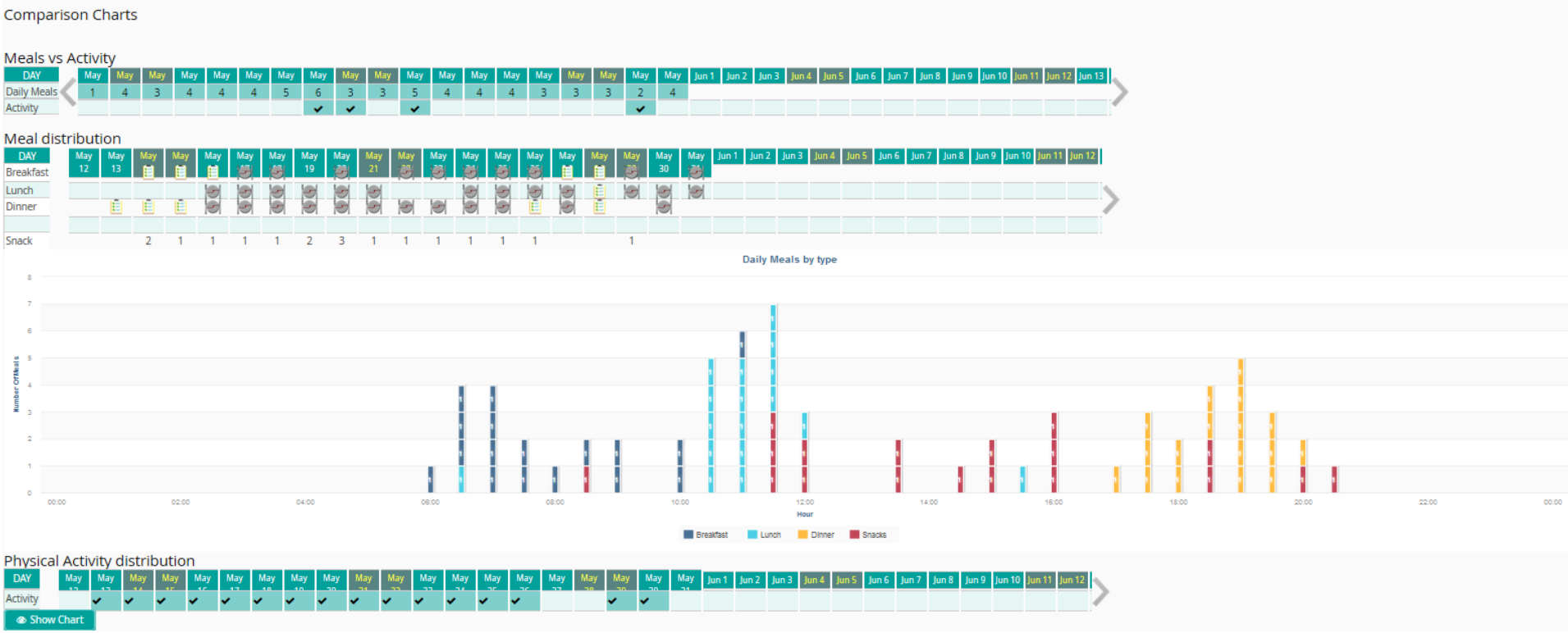
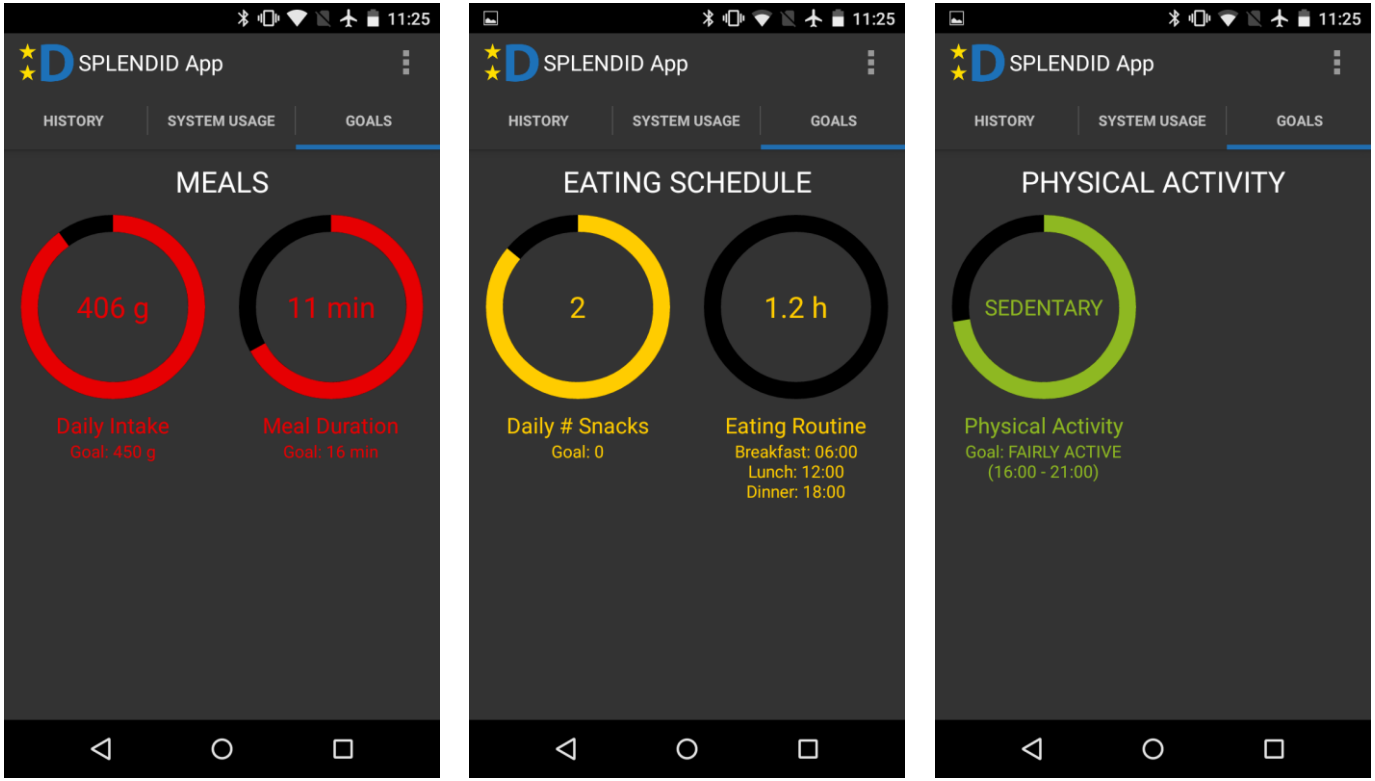
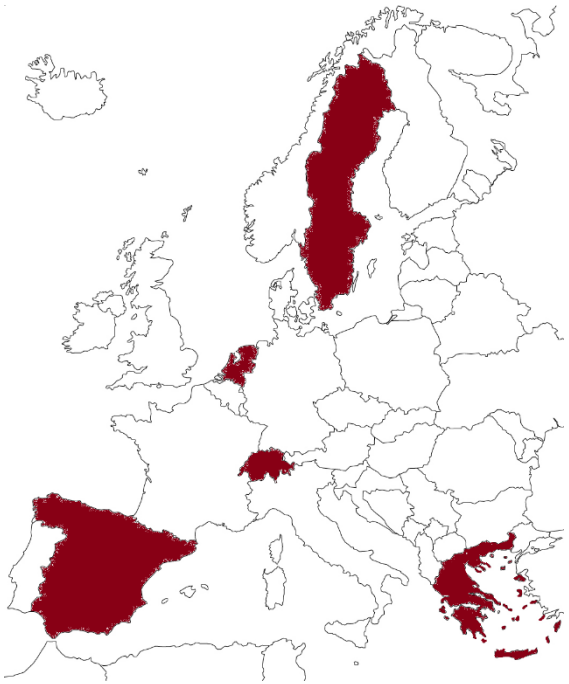
Current progress



Current progress



Collaborators



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Wageningen University

Wageningen UR

mandometer

Internationella Engelska Gymnasiet

Hellenic Republic

Aristotle University of Thessaloniki

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ioannis.loakimidis@ki.se

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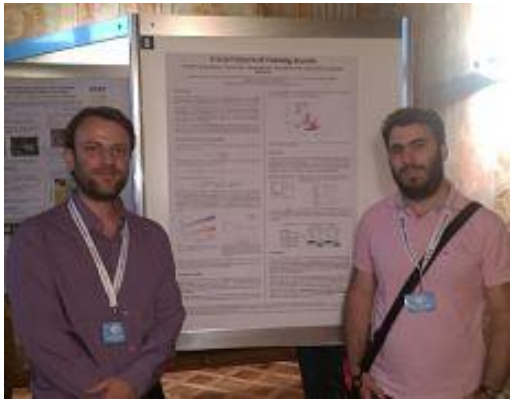
Thank you



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