Resting metabolism and energy expenditure during walking in pregnant women
Dataset from EVOBREATH 2016-2017

Ana Mateos
Research Leader on Palaeophysiology and Human Ecology Group. CENIEH. Spain
E-mail. ana.mateos@cenieh.es

Jesús Rodríguez
Research Leader on Palaeoecology of Mammals Group. Curator Vertebrate Collections. CENIEH. Spain
E-mail. jesus.rodriguez@cenieh.es

This Dataset includes data from an experimental research project led by Dr. A. Mateos and approved by the Hospital Universitario de Burgos Ethical Committee (Burgos, Spain) (BioE6-CEIC 1595) on the energetic cost of walking in pregnant women during the last trimester of gestation.

The aim of the project was to quantify the energetic cost of walking in a sample of 31 urban pregnant women, aged 28 to 44 years, during the last trimester of gestation (weeks 28th and 32nd). As it is known, the last trimester of gestation implies an increase in the body mass of the mother, and this condition can affect the energetic expenditure of her physical activity.

The entire data set acquired was incorporated into the EVOBREATH database (Mateos and Rodríguez, 2023) and data were partially analysed in Prado-Nóvoa et al (2021) (Prado-Nóvoa, O., Rodríguez, J., Martín García, A., Mateos, A. 2021. Body composition helps. Differences in energy expenditure between pregnant and non-pregnant females. American Journal of Human Biology 33 (4), e23518. https://doi.org/10.1002/ajhb.23518). The dataset contains some anthropometrical and body composition data of the females. Metabolic rates were recorded in the different resting and walking tests during the 28th and 32nd weeks of gestation.

The sample of volunteers was exhaustively controlled using exclusion criteria that aimed to eliminate or minimize the effects of medication, food ingestion, or metabolic and cardio-respiratory pathologies. Participants were required to fast overnight prior to having their metabolic measurements, taken in a post-absorptive state in the morning (Leonard, 2012). The experiments were conducted at the Bioenergy and Motion Lab (LabBioEM) of the National Research Center on Human Evolution (CENIEH, Burgos, Spain) in a session indoors in 2016-2017, under standard conditions of temperature (21.5ºC-23ºC) and humidity (29%-31%).

The following standardized protocols were applied:

- ✓ An *Anthropometric Protocol* was performed following normalised standards. Height was measured to the nearest 0.1 cm with a Harpenden stadiometer (Holtain Limited). Body mass (Weight) was obtained with a digital scale to the nearest 0.1 kg.

- ✓ A *Body Composition Protocol* was applied, in accordance with the normalised procedure established in the Consensus Conference of the National Institutes of Health (NIH, 1996), with a tetra-polar analyser vector of body impedance, BIA

101 AKERN©, and the software BodyGram Pro© (v2010). The proportion of fat mass (FM), fat-free mass (FFM), and total body water (TBW) was obtained.

- ✓ An *Indirect Calorimetry Protocol* was carried out with an ergospirometer Master Screen-CPX JAEGER® and the LabManager© IntelliSupport 5.72 software application. The resting metabolic rate (RMR) was measured during 30 minutes, with each participant laying back on a stretcher while wearing a breathing mask and a heart rate monitor. Walking tests (W20) were carried out on the treadmill during 20 minutes at a speed of 4 km/h. These metabolic rates were recorded during the 28th and 32nd weeks of gestation of participants (RMR_28, RMR_32, W20_28, W20_32).

The dataset contains the following variables:

Variable	Description	Units
ID	Identification code of the subject	
Sex	F (Female)	
Age	Age of the subject	years
Height	Stature	cm
Weight	Body mass	kg
FFM	Fat-Free Mass	kg
FM	Fat Mass	kg
TBW	Total Body Water	kg
EE (kcal/24h)	Energy expenditure during resting and walking tests	kcal/day
RMR (kcal/h)	Resting Metabolic Rate	kcal/hour
RMR_28	Test_Resting Metabolic Rate at 28th week during 30 minutes	kcal/hour
RMR_32	Test_Resting Metabolic Rate at 32nd week during 30 minutes	kcal/hour
EE Walking (kcal/h)	Energy expenditure during walking trials	kcal/hour
W20_28	Walking test at 28th week during 20 minutes at 4 km/h	kcal/hour
W20_32	Walking test at 32nd week during 20 minutes at 4 km/h	kcal/hour

References

Leonard, W. R. 2012. Laboratory and field methods for measuring human energy expenditure. *American Journal of Human Biology* 24, 372–384. https://doi.org/10.1002/ajhb.22260

NIH. 1996. Bioelectrical impedance analysis in body composition measurement: National Institutes of Health Technology Assessment Conference Statement. *American Journal of Clinical Nutrition* 64 (3), 524S-532S. https://doi.org/10.1093/ajcn/64.3.524S

Mateos, A. Rodríguez, J. 2023. EVOBREATH. Datasets for Evolutionary Bioenergetics Research on Anthropology. *Data in Brief* 47, 10895. https://doi.org/10.1016/j.dib.2023.108955

Prado-Nóvoa, O., Rodríguez, J., Martín García, A., Mateos, A. 2021. Body composition helps. Differences in energy expenditure between pregnant and non-pregnant females. *American Journal of Human Biology* 33 (4), e23518. https://doi.org/10.1002/ajhb.23518