

Educational material produced by the Chilean National Institute of Sports.

The National Institute of Sports reinforced the intervention with a grant of US \$200 000 over the course of three years, starting in 2001. The Institute also printed educational materials for the children and didactic guides for the teachers. A physical activity programme was incorporated into the curriculum of day care centres in half of the country. Obesity in preschool children was reduced from 10.4% in 2000 to 8.4% in 2010.

To ensure sustainability, the intervention programme, initially supported by the IAEA technical cooperation programme has been adopted by the national authorities in Chile. Currently, about seven regions are taking part of the project, with plans to roll it out in the rest of the country.



Physical activity is an integral part of the school day.

People need food and water to survive but nutritious food is central to healthy living. Energy-dense fat, protein and carbohydrates need to be accompanied by vitamins and minerals (micronutrients) to ensure proper nutrition. Malnutrition -too much or too little- can be equally bad. The coexistence of under-nutrition and obesity represents the double burden of malnutrition that affects many low and middle income countries. Obesity has become a major health problem, driven by changes in diet and lifestyle. Obesity in children, in particular, is on the rise.



Obesity is a key risk factor for non-communicable diseases, such as diabetes, cardiovascular disease, hypertension, osteoporosis and some cancers.

The IAEA Contribution

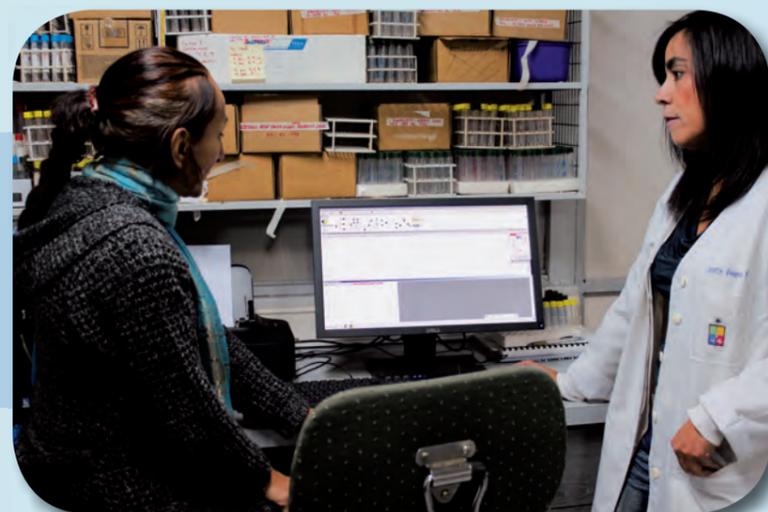
Stable isotope techniques can be used to establish the ratio of lean tissue to fat in body composition, they estimate the number of calories spent each day, and they can also tell whether breastfed babies are exclusively breastfed according to the WHO recommendations, and how much human milk they take in. This provides Member States with information to design or improve their national health and nutrition programmes.

Stable isotope techniques play an important role in development and monitoring of interventions against malnutrition. Compared to conventional techniques, these methods, which do not involve radiation, offer much more sensitive and specific measurements.



The IAEA through its technical cooperation programme and coordinated research activities works with Member States to address their needs in relation to malnutrition through the use of stable isotope techniques. Capacity building through training and provision of equipment enables laboratories worldwide to use these methods in the community setting as they are safe, non-invasive and can be applied in adults and children of all ages.

The Regional Cooperation Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean (ARCAL) is an important partner for the IAEA in the region.



Scientists at INTA, University of Chile are using stable isotope techniques to evaluate programmes addressing childhood obesity.

Case Study: Chile

The increasing prevalence of childhood obesity in Latin America has been a cause for concern. In Chile, the IAEA has worked with the University of Chile, Institute of Nutrition and Food Technology (INTA) since 1997 to address malnutrition in the country.

The Energy Metabolism and Stable Isotopes Laboratory (EMSIL) was established in 1998 to provide analytical services, in particular as they relate to assessing body composition, infant feeding practices and total energy expenditure. EMSIL has since become a regional centre of excellence, providing analytical services to the region, and hosting numerous fellowships and scientific visits in the area of stable isotope techniques in nutrition.



Children exercising at a day care centre in Santiago.

In collaboration with the Ministry of Health and the National Board of Day Care Centres, Chile took part in the regional project RLA/7/008 on 'Using Isotopes to Evaluate Nutrition Intervention Programmes' from 1999 to 2004 to assess the impact of an iron fortified programme on anaemia in children from six to 18 months. This programme helped reduce the rate of iron deficiency anaemia from 28% to 8%.

Within the same regional project, a pilot study focussed on energy expenditure in children, aged 4-5 years, attending day care centres in Santiago. The children had an energy intake of 10% over recommended values and they were also found to be physically inactive. An intervention programme was developed and evaluated as part of two more regional projects RLA/6/052 and RLA/6/059 between 2005 and 2012, supported by the Ministry of Health.



Physical education class at a primary school in Santiago.