

# Tiredness: nutritional & non-nutri tips

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## **NUTRI-lipidomics** *Molecular nutrition and healthy diet*

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## What is “tiredness”?

Tiredness can have different origins and be the consequence of a disease or symptom of a widespread and unspecified illness.

For this reason, it is important to exclude a disease or an acute condition, returning your symptoms to the treating physician.

For example, tiredness can accompany anemia, may be secondary to infections or pathologies, including chronic kidney failure, neurodegenerative diseases (Parkinson’s disease, multiple sclerosis, etc.), depression, tumors and its therapies, hypothyroidism, celiac disease, obesity and malnutrition.

There is also a disorder called **Chronic Fatigue Syndrome (CFS)**, which is characterized by the permanence of typical symptoms for at least 6 months, without appreciating resting improvements (1); the causes are unknown, but it has been found that **people with this disorder have a cell-level problem in mitochondrial energy production.**

## Harvard Medical School advice on CFS

- Make lifestyle changes aimed at reducing physical and psychic stress. Living in a perpetual state of “alert” produces continuous hormones that should normally only be activated for short periods.
- Practice physical activity with regularity and graduation. Excessive sports can have a counterproductive effect.
- Treat any mood disorders, such as depression, or diffuse pain, often associated with CFS.
- Assess the intake of omega 3 fatty acids; although they are not part of the official protocols, there are studies that support their integration.

## How to fight tiredness with diet

All conditions accompanied by a state of fatigue, due to a specific pathology that are related to unspecific situations, benefit from **optimum nutrition**, moderate **physical activity**, good bodily composition and, in large part, a correct **loss of weight**.

**The right balance of calorie-balanced and balanced diet and moderate physical activity leads to the best possible expression of our cellular potential**, which is mediated by two important hormones: leptin and adiponectin. Messages that transmit these two hormones are centrally integrated into a brain structure called hypothalamus, allowing regulation of hunger and satiety signals.

The quantity and quality of the foods will result in changes in the mitochondria dynamics (our cellular power "stations") that may prefer dissipation or energy accumulation. While it is important not to exceed the food intake, on the other hand you should not go too far below your caloric needs, balancing your sporting activity.



It is important to achieve **a weight of health**, identifying it not only through the relationship between weight and height, but with the evaluation of your body composition, differentiating fat from muscle (not to be confused with lean mass), as well as intra and extracellular fluids. The exam that best describes these magnitudes, not invasive or expensive, is the tricompartmental analysis of bodily bioimpedance.

The balanced diet should be aimed at achieving or maintaining its optimal body composition and maintaining high the cellular functioning. This can be achieved with:

- the right caloric intake;
- balanced distribution of macronutrients (carbohydrates, proteins and fats);
- Constant presence of micronutrients (vitamins and minerals) and bioactive substances (polyphenols, etc.);
- a proper supply of water.

In particular, Omega-3 fatty acids are important for the "good" cellular functioning, which, if properly integrated, promote better mitochondrial functioning and reduced free radical production (ROS). Instead, an opposite effect was reported with high doses of saturated fat.

Remember that Omega-3s must be introduced with food. The reference interval for the intake of these nutrients is between 0.5 and 2.0% of the total dietary energy and, in particular for EPA and DHA, an average daily intake of 250 mg (3). EPA and DHA are present in algae and fishery products.

The following table lists the main sources of food.

<b>Omega 3 (EPA e DHA) in the main fish products</b>	<b>g/100 g</b>
Atlantic salmon, breeding – baked/griddled	1.8
European sea buckthorn, oil, dripping	1.7
Sardine of the Pacific, in tomato sauce – dripped	1.4
Atlantic herring – in brine	1.2
Atlantic tuna – baked/griddled	1.0
Rainbow Trout, breeding – baked/griddled	1.0
*Swordfish – cooked to dry	0.7
*White tuna, preserved in water, dripped	0.7
Flatfish (sole, plateau) – baked/griddled	0.4
Pacific and Atlantic Halibut – baked/griddled	0.4
Atlantic cod – baked/griddled	0.1
Blue cabbage – steaming	0.7
Oriental, wild, baked octopus – baked/griddled	0.5
Sea scallop (various species) – baked/griddled	0.3
Clams, of various species – steaming	0.2
Shrimps, of various species – steaming	0.3

Source: USDA Nutrient Database for Standard Reference

\* Beware of unwanted heavy metal content in large-scale fish.

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## Bibliography

- (1) Centers for Disease Control and Prevention (CDC).  
<http://www.cdc.gov/cfs/> {<http://www.cdc.gov/cfs/>}
- (2) Putti L, et al. Diet impact on mitochondrial bioenergetics and dynamics. *Frontiers in Physiology*. 6:109. doi: 10.3389/fphys.2015.00109
- (3) LARN IV Revisione. Livelli di Assunzione di Riferimento di Nutrienti ed energia. 2014.

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*The diet tips, written in the article, are not intended to be a substitute for a personal nutrition plan and are to be adapted to specific cases.*