



Narodowe Centrum Edukacji Żywieniowej



ANAEMIA

Anaemia is a reduction in the concentration of haemoglobin, haematocrit, and the number of erythrocytes in the blood. It may be a result of the loss of red blood cells during acute or chronic bleeding, excessive breakdown of erythrocytes or a disruption of the blood-forming process resulting from deficiencies of iron, vitamin B12, folic acid. Individuals with poorly balanced diets, including vegan and vegetarian diets, and those with gastrointestinal disorders are at risk of iron and vitamin B12 deficiencies. The main symptoms of anaemia include weakness, concentration problems, rapid fatigue, dizziness, shortness of breath, tachycardia, pale skin and mucous membranes, and brittle nails.

Diet

A change in diet is an adjunct to the treatment of anaemia and part of activities to prevent its recurrence in the future. **The basic idea is to provide the required amounts of iron, vitamin B12 and folate (folic acid) with food.** On the other hand, it is also important that meals are well-balanced in order to increase the use of nutrients and avoid restriction of their absorption. At the same time, the diet should be tailored to your individual needs and preferences.



Key nutritional recommendations

- 1 Follow a varied and diverse diet in line with the Healthy Eating Plate. The diet should prevent vitamin and mineral deficiencies.
- 2 Iron and folate are very commonly found in animal and plant foods. Vitamin B12, on the other hand, is naturally found only in animal products, but plant products can be enriched with it.
- 3 The best absorbed **heme iron** is found in meat, fish, and eggs. However, according to the recommendations, the amount of animal products consumed should be moderate. Limit red meat to a maximum of 350-500 g per week and processed meat products (cold cuts, sausages, pates, offal products, etc.) to amounts as small as possible. Choose lean meats and eggs on a daily basis, and eat fish at least 1-2 times a week.
- 4 The more difficult-to-absorb form is **non-heme iron**, which is found in eggs, wholemeal cereal products, legumes, some vegetables, nuts, and seeds. Despite the lower bioavailability of non-haem iron, plant products are still an important source of iron, even in a mixed diet, because of its high content and prevalence.
- 5 **Vitamin C** increases iron assimilation, so eat iron-rich foods together with foods that are sources of **vitamin C** (e.g., red bell pepper, cruciferous vegetables, parsley, kiwi, blackcurrant, tomatoes, and raspberries).
- 6 In order to increase iron absorption, it is also a good idea to add to meals foods rich in **vitamin B6**, which is involved in the blood-forming process, e.g., whole-grain cereal products, legumes, cruciferous vegetables, potatoes, certain fruits such as avocados, bananas, and nuts.
- 7 The absorption of iron is limited by phosphates, phytates, oxalates, tannins and calcium. Therefore, it is beneficial to limit the consumption of processed products that are sources of phosphates and to **avoid combining products that are a good source of iron**, e.g. red meat or legumes, with calcium-rich milk, dairy products, and sources of tannins and polyphenols, e.g. tea, coffee, wine or cocoa. It is also worthwhile to reach for fermented products, e.g. sourdough bread, tempeh, fermented vegetables, which releases iron from its compounds with phytates and oxalates.
- 8 In order to supply **vitamin B12**, eat products that are natural sources of vitamin B12 at each meal, i.e. animal products (meat, fish, eggs, dairy products) or plant products fortified with vitamin B12, e.g. plant-based drinks. Vitamin B12 supplementation is an alternative.
- 9 **Folate** (folic acid) is found in greatest quantities in leafy vegetables e.g. cabbage, lettuce, kale, parsley and legumes e.g. lentils, beans, peas. They are light- and temperature-sensitive, so vegetables and fruit are best eaten raw or after a short heat treatment.



10

Make sure that your diet contains products that provide micronutrients such as **copper and cobalt**. These nutrients are important in the blood-forming process. Because copper helps to transport iron and cobalt, it is necessary for the synthesis of vitamin B12. Cocoa, nuts, oatmeal, eggs, buckwheat groats and green vegetables are sources of these ingredients.

Physical activity

1

Weakness and fatigue, often present with anaemia, reduce the ability to undertake physical activity.

2

Anaemia is a disorder frequently seen in competitive athletes (15-35% of women and 3-11% of men), and it is caused by a number of factors. Hormonal response to exercise, which reduces intestinal iron absorption, increased loss through sweat, low-grade gastrointestinal bleeding and inadequate dietary supply are the best studied factors, among others. Proper diet quality is a necessary part of an athlete's lifestyle.

Other lifestyle elements

1

Limit, or preferably eliminate, alcohol from your diet as it impairs the absorption of folate and its gut-liver axis.

References:










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2. Benson C. S, Shah A., Stanworth S. J., Frise C. J., Spiby H., Lax S. J., Murray J., Klein A. A. The effect of iron deficiency and anaemia on women's health. *Anaesthesia*. 2021;76 Suppl 4: 84-95. doi: 10.1111/anae.15405.
3. Sim M., Garvican-Lewis L. A., Cox G. R., Govus A., McKay A. K. A., Stellingwerff T., Peeling P.: Iron considerations for the athlete: a narrative review. *Eur. J. Appl. Physiol.* 2019; 119(7): 1463-1478. doi: 10.1007/s00421-019-04157-y.



Recommended and not recommended products in anaemia










Remember that the overall composition of your diet, the composition of individual meals and the quality of the products you choose is important. The table below provides examples of products that should be the basis of your diet and those that you should keep to a minimum.

Product group	Recommended	Not recommended
Vegetables 	<ul style="list-style-type: none"> all fresh and frozen especially those high in vitamin C and folate, e.g. bell pepper, broccoli, kale, kohlrabi, parsley 	<ul style="list-style-type: none"> vegetables with fatty sauces, roux
Fruit 	<ul style="list-style-type: none"> all fresh and frozen especially those with a high vitamin C and folate content such as: strawberries, blackcurrants, chokeberries, citrus: lemons, oranges, mandarins, grapefruits, limes dried fruit in moderation 	<ul style="list-style-type: none"> candied fruit fruit in syrups
Grain products 	<ul style="list-style-type: none"> wholemeal flours whole wheat and graham bread natural cereal flakes: oat, barley, spelt, rye wheat bran, rye bran, oat bran groats: buckwheat, barley pearl, bulgur, quinoa rice: brown, wild, red whole wheat pasta: wheat, rye, buckwheat, spelt 	<ul style="list-style-type: none"> refined flour confectionery breads, light breads (toast, Kaiser rolls, bread, butter rolls) breakfast cereals with added sugar (corn, chocolate, muesli, crunchy) small groats: couscous, farina, cornmeal white rice light pasta: wheat, rice noodles
Potatoes 	<ul style="list-style-type: none"> cooked baked 	<ul style="list-style-type: none"> potatoes with additives like cream or butter fried crisps, French fries deep-fried potato pancakes
Milk and dairy products 	<ul style="list-style-type: none"> reduced-fat milk (up to 2%) dairy products: natural (no sugar added), fermented, up to 2% fat (e.g. yoghurt, kefir, buttermilk, skyr, grain cheese, soured milk). skimmed and semi-skimmed cottage cheese mozzarella light cheese for sandwiches (in moderation) 	<ul style="list-style-type: none"> whole milk condensed milk cream, coffee creamer fruit yoghurts with added sugar, dairy desserts cheeses: full-fat cheese, processed cheese, feta-type cheeses, soft cheeses such as brie, camembert, roquefort, full-fat mozzarella, mascarpone
Eggs 	<ul style="list-style-type: none"> soft boiled, hard boiled, poached eggs, scrambled eggs and omelette, fried with little or no fat 	<ul style="list-style-type: none"> eggs fried in large amounts of fat (e.g. butter, bacon, lard, salo (slanina)) eggs with mayonnaise
Meat and meat products 	<ul style="list-style-type: none"> lean meats without skin: veal, chicken, turkey, rabbit in moderation, lean beef and pork (e.g. loin, tenderloin) lean cold cuts in moderation, preferably home-made: tenderloin, cooked ham, poultry cold cuts, roast loin, roast turkey/chicken breast 	<ul style="list-style-type: none"> fatty meats: pork, beef, mutton, goose, duck fatty cold cuts (e.g. gammon, salami, brawn, bacon, spam) canned meats, offal cold cuts, pâtés, hot dogs, kabanos, sausages
Fish, fish products and seafood 	<ul style="list-style-type: none"> lean or fatty sea and freshwater fish (e.g. cod, sole, hake, blue grenadier, pikeperch, bream, pike, perch, mackerel, salmon, halibut, carp) in moderation herring and other fish in oil, smoked fish 	<ul style="list-style-type: none"> canned fish, caviar
Legumes and legume products 	<ul style="list-style-type: none"> all, e.g. soybeans, chickpeas, peas, lentils, beans, broad beans legume spreads soya flour, soya drinks with no added sugar, soya preparations: tofu, tempeh pastas made from legume (e.g. beans, peas) 	<ul style="list-style-type: none"> low-quality ready-made legume preparations (e.g. soya sausages, breaded soy cutlets, soya pâtés, veggie burgers)



Recommended and not recommended products



Product group	Recommended	Not recommended
Fats 	<ul style="list-style-type: none"> olive oil, canola oil, linseed oil blends of butter with vegetable oils not containing palm oil in their composition soft margarines 	<ul style="list-style-type: none"> butter and clarified butter in limited quantities lard, bacon, tallow hard margarines (blocks) tropical oils: palm, coconut mayonnaise
Nuts, seeds 	<ul style="list-style-type: none"> nuts (e.g. walnuts, hazelnuts), almonds and seeds (e.g. pumpkin, sunflower) 	<ul style="list-style-type: none"> nuts and seeds: salted, in chocolate, caramel, honey, sprinkles, breadings and in chips
Sugar and sweets, salty snacks 	<ul style="list-style-type: none"> dark chocolate min. 70% cocoa fruit purees, mousses, sorbets with no added sugar natural yoghurt with fruit, fruit yoghurt with no added sugar natural sweeteners (e.g. xylitol, stevia, erythritol) low-sugar jam jellies and kissels with no added sugar home-made baked goods with no added sugar 	<ul style="list-style-type: none"> sugar (e.g. white, cane, brown, coconut) honey, maple syrup, date syrup, agave syrup sweets with a high sugar and fat content (e.g. cakes, biscuits, chocolate bars, milk chocolate and white, halva, doughnuts, angel wings, sweets) salty snacks (e.g. chips, salty sticks, crispy flakes, crackers, nachos, crisps)
Beverages 	<ul style="list-style-type: none"> water drinks with no added sugar (e.g. coffee, cereal coffee, teas, herbal and fruit infusions, kompots, cocoa) vegetable and fruit juices in limited quantities homemade unsweetened lemonade 	<ul style="list-style-type: none"> alcoholic beverages strong coffee, tea sweetened carbonated and non-carbonated drinks energy drinks nectars, high-sugar fruit syrups drinking chocolate
Spices and sauces 	<ul style="list-style-type: none"> fresh and dried single-ingredient herbs (e.g. basil, oregano, turmeric, cinnamon, ginger, black pepper), herbes de Provence spice blends without added salt lemon, lime juice 	<ul style="list-style-type: none"> Himalayan/table/sea salt in excessive amounts (more than 5 g per day) spice mixtures containing a high proportion of salt bouillon cubes liquid flavour enhancers prepared sauces
Soups 	<ul style="list-style-type: none"> soups with vegetable or lean meat broths whitened with milk up to 2% fat, yoghurt 	<ul style="list-style-type: none"> soups with fatty meat broths with roux, whitened with sour cream instant soups
Prepared meals 	<ul style="list-style-type: none"> mix of frozen fruit and vegetables mixtures of groats and legumes instant oatmeal creamy soups ready-made stir-fry vegetable dishes salt-free vegetable spreads and purees <p><i>*Read labels, compare ingredients and pay attention to added sugar, salt and fat content.</i></p>	<ul style="list-style-type: none"> fast food (e.g. toasted open-faced sandwiches, hot dogs, hamburgers, kebabs) frozen pizza and toasted open-faced sandwiches ready-made foods in bread crumbs, in fatty sauces, in refined flours. instant dishes (e.g. sauces, soups)
Technological processing of food 	<ul style="list-style-type: none"> boiling in water steaming grill (electric grill, grill pans, in the case of a charcoal-garden grill on trays) baking in foil, parchment paper or under cover without fat fat-free frying stewing without pre-frying <p><i>*Try not to add fat, but occasionally use a small amount of recommended vegetable fat, e.g. olive oil or canola oil.</i></p>	<ul style="list-style-type: none"> fried stewing with pre-frying baked in a lot of fat breaded



Example of a quality menu in anaemia

BREAKFAST:

Scrambled eggs with vegetables

- eggs
- cherry tomatoes
- parsley
- wholemeal rye bread
- butter

LUNCH:

Strawberry smoothie with nuts

- kefir
- frozen strawberries
- ground hazelnuts
- sesame

DINNER:

Grilled tenderloin

- pork tenderloin
- spices: rosemary, pepper
- parsley
- pearl barley
- lettuce mix
- red bell pepper
- olive oil



AFTERNOON SNACK:

Yoghurt with dried fruit and nuts

- natural yoghurt
- dried cranberries
- dried apricots
- cashew nuts
- chia seeds

SUPPER:

Sandwich with white bean spread

- wholemeal bread with sunflower seeds
- fresh cucumber
- bean spread: white beans (canned), onions, prunes
- canola oil, cloves, pepper