



### Why is iron so important for your health?

Iron is an essential nutrient for your body, which you get from your food. It is needed for your mental and physical health and to keep your energy levels up.<sup>1-3</sup> Iron is present in a substance called haemoglobin, which is found in red blood cells. Haemoglobin carries oxygen in the blood from the lungs to the rest of the body.<sup>4</sup> Oxygen is required in your brain for concentration and in your muscles for physical energy.<sup>5</sup> Iron is also needed to maintain a healthy immune system, helping you to fight off infections.<sup>6</sup>

### What happens if you don't get enough iron?

If the iron levels in your body are low you can become iron deficient. The recommended levels for iron in the body are different for different people, depending on age and gender.<sup>7</sup> Iron deficiency is the most common nutrient deficiency in the world.<sup>8</sup>

Over time, iron deficiency can mean that your body makes fewer healthy red blood cells, a condition known as Iron Deficiency Anaemia (IDA). In industrialized countries, between two and four percent of people have iron deficiency anaemia.<sup>7,9,10</sup> There are many symptoms of iron deficiency anaemia, however one of the main signs is feeling fatigued or exhausted<sup>1</sup> because your blood is less able to transport oxygen around your body.<sup>4</sup>

If iron deficiency is not treated there can be long-term consequences for your health. Fatigue and other symptoms of iron deficiency can also lower your quality of life and reduce your ability to concentrate and be productive at work.<sup>3</sup> If you think you may be anaemic or iron deficient, it is important that you speak to your doctor so that they can investigate further.

### Are you getting enough iron?

Balancing the supply and demand for iron in your body is important to maintain good health. Normally your iron levels remain in balance, with iron from your diet replacing the iron stores used up by your body.<sup>1</sup> The iron in your food is absorbed into the bloodstream in your small intestine.<sup>1</sup>

The supply and demand for iron in your body can become unbalanced for a number of reasons and this can lead to iron deficiency.

A decreased supply of iron to your body can be caused by...

- **A lack of iron in your diet.** Iron can be found in both animal products and plant foods. Iron from animal products (known as haem iron) is better absorbed by your body than iron from plant foods (known as non-haem iron).<sup>1</sup> If you are vegetarian or vegan it is more likely that you will not be getting enough iron.<sup>2</sup> Choosing what you eat wisely can help to keep your iron levels up.

- **Iron from your food not being absorbed properly in your small intestine.** If you have Inflammatory Bowel Disease (Crohn's disease or ulcerative colitis) or coeliac disease, then the lining of your small intestine may be inflamed. This means that less iron can be absorbed from your food into your bloodstream.<sup>3-5</sup>

An increased demand for iron may be caused by...

- Blood loss, for example as a result of:
  - Heavy periods.<sup>2</sup>
  - Internal bleeding from your gut (gastro-intestinal bleeding).<sup>3</sup>
  - Frequent blood donation.<sup>6</sup>
  - Traumatic injuries/ accidents.<sup>7,8</sup>
  - Surgery.<sup>7,9,10</sup>
- Increased demand for red blood cells or oxygen in your body, for example as a result of:
  - Intense exercise.<sup>11</sup>
  - Growth and development in children and adolescents.<sup>1</sup>
  - Pregnancy.<sup>2</sup>
- Chronic inflammation in diseases such as Inflammatory Bowel Disease or Rheumatoid Arthritis: If you have a condition that involves chronic inflammation, your immune system can block the release of iron from your body's iron stores, reducing the amount of iron available to make red blood cells.<sup>12</sup>
- Other medical conditions and/or therapies, such as haemodialysis for patients with kidney disease.

If you are not getting enough iron, for any reason, you might find yourself lacking in energy and feeling exhausted day after day. While there are other symptoms of iron deficiency, extreme tiredness or fatigue is often reported by patients.<sup>4</sup>

### Do you feel more than just tired?

Everyone gets tired from time to time, but if you feel exhausted every day, it may be that you are suffering from fatigue. How do you tell the difference between tiredness and fatigue?

A good first step towards understanding why you are feeling tired is to look at your lifestyle and daily stresses and strains. These might include:

- Lack of exercise.<sup>1-3</sup>
- Lack of sleep.<sup>4</sup>
- Too much physical activity.<sup>5</sup>
- Excess caffeine intake,<sup>6</sup> or excess alcohol intake.<sup>7</sup>
- Illnesses such as colds or flu.<sup>5</sup>

If you are tired for one of these reasons, it is likely that your tiredness will not last very long and that you will feel better after exercising, resting, or getting more sleep.<sup>5</sup>



Use our Symptom Browser to see the complete list of symptoms that iron deficiency can cause and to understand what each of these symptoms involves.



## Increased Susceptibility to Infections.<sup>18</sup>

If you seem to be picking up more infections than usual, such as coughs and colds, this could be a sign that you have iron deficiency. Iron is needed by your body to maintain a healthy immune system.

## Dizziness,<sup>13,19,20</sup> Irritability,<sup>21-23</sup> and Loss of Concentration.<sup>23-25</sup>

Feeling irritable, dizzy or losing concentration quickly could be due to iron deficiency. Iron helps your blood deliver oxygen around the body, and feeling irritable or dizzy may be a sign that your brain is not getting enough oxygen.

## Don't diagnose yourself. Talk to your doctor.

If you experience the symptoms listed above, or are concerned for your health in any way, it is important that you talk to your doctor to find out what the underlying problem might be. Your doctor will be able to perform tests to determine whether you have iron deficiency or if your symptoms are due to a different condition.

## References

### Why is iron so important for your health?

1. **Verdon F, Burnand B, Stubi C-LF, et al.** Iron supplementation for unexplained fatigue in non-anaemic women: double blind randomised placebo controlled trial. *BMJ*. 2003;326:1124.
2. **Brownlie T, Utermohlen V, Hinton PS, Haas JD.** Tissue iron deficiency without anemia impairs adaptation in endurance capacity after aerobic training in previously untrained women. *Am J Clin Nutr*. 2004;79(3):437-43.
3. **Haas JD, Brownlie IV T.** Iron Deficiency and Reduced Work Capacity : A Critical Review of the Research to Determine a Causal Relationship. *J Nutr*. 2001;131(2):676S-690S.
4. **Dean L.** 1. Blood and the cells it contains. *Blood Groups Red Cell Antigens*. 2005:1-6.
5. **Lozoff B, Beard J, Connor J, Felt B, Georgieff M.** Long-lasting Neural and Behavioral effects of iron deficiency in infancy. *Nutr Rev*. 2006;64:S34-S91.
6. **Dhur A, Galan P, Hercberg S.** Iron status, immune capacity and resistance to infections. *Comp Biochem Physiol*. 1989;94A(1):11-19.
7. **McLean E, Cogswell M, Egli I, Wojdyla D, de Benoist B.** Worldwide prevalence of anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993-2005. *Public Health Nutr*. 2009;12(4):444-54. doi:10.1017/S1368980008002401.
8. **Radlowski EC, Johnson RW.** Perinatal iron deficiency and neuro-cognitive development. *Front Hum Neurosci*. 2013;7:1-11.
9. **CDCCDC. (n.d.).** Iron Deficiency --- United States 1999--2000. CDC MMWR. Retrieved from <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5140a1.htm>. Iron Deficiency --- United States, 1999--2000. CDC MMWR. Available at: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5140a1.htm>.
10. **Anne C. Looker, Peter R. Dallman, Margaret D. Carroll, Elaine W. Gunter CLJ.** Prevalence of Iron Deficiency in the United States. *JAMA*. 1997;277(12):973-976.

### Are you getting enough iron?

1. **Hurrell R, Egli I.** Iron bioavailability and dietary reference values. *Am J Clin Nutr*. 2010;91:1461-1467. doi:10.3945/ajcn.2010.28674F. Am.
2. **Killip S, Bennett JM, Chambers MD.** Iron deficiency anemia. *Am Fam Physician*. 2007;75(5):671-8.
3. **Stein J, Hartmann F, Dignass AU.** Diagnosis and management of iron deficiency anemia in patients with IBD. *Nat Rev Gastroenterol Hepatol*. 2010;7(11):599-610. doi:10.1038/nrgastro.2010.151.
4. **Miller JL.** Iron deficiency anemia: a common and curable disease.

*Cold Spring Harb Perspect Med*. 2013;3(7):1-13. doi:10.1101/csh-perspect.a011866.

5. **Presutti RJ, Cangemi JR, Cassidy HD, Hill D a.** Celiac disease. *Am Fam Physician*. 2007;76(12):1795-802.
6. **Finch CA, Cook JD, Labbe RF, Culala M.** Effect of blood donation on iron stores as evaluated by serum ferritin. *Blood*. 1977;50(3):441-7.
7. **Yip R, Parvanta I, Cogswell M, et al.** Recommendations to prevent and control iron deficiency in the United States. *Morb Mortal Wkly Rep*. 1998;47(RR-3):1-29.
8. **Topley E, Clarke R.** The anemia of trauma. *Blood*. 1956;11(4):357-69.
9. **Love AL, Billett HH.** Obesity, bariatric surgery, and iron deficiency: true, true, true and related. *Am J Hematol*. 2008;83(5):403-9. doi:10.1002/ajh.21106.
10. **Foss NB, Kehlet H.** Hidden blood loss after surgery for hip fracture. *J Bone Joint Surg Br*. 2006;88(8):1053-9. doi:10.1302/0301-620X.88B8.17534.
11. **Chatard JC, Mujika I, Guy C, Lacour JR.** Anaemia and iron deficiency in athletes. Practical recommendations for treatment. *Sports Med*. 1999;27(4):229-40.
12. **Goddard AF, James MW, McIntyre AS, Scott BB.** Guidelines for the management of iron deficiency anaemia. *Gut*. 2011;60(10):1309-16. doi:10.1136/gut.2010.228874.

### Do you feel more than tired?

1. **Schwartz AL, Mori M, Gao R, Nail LM, King ME.** Exercise reduces daily fatigue in women with breast cancer receiving chemotherapy. *Med Sci Sports Exerc*. 2001;33(5):718-723.
2. **Lewis G, Wessely S.** The epidemiology of fatigue: More questions than answers. *J Epidemiol Community Health*. 1992;46:92-97.
3. **Valdini AF, Steinhardt SI, Jaffe AS.** Demographic Correlates of Fatigue in a University Family Health Centre. *Fam Pract*. 1987;4(2):103-107.
4. **Åkerstedt T, Knutsson A, Westerholm P, Theorell T, Alfredsson L, Kecklund G.** Mental fatigue, work and sleep. *J Psychosom Res*. 2004;57(5):427-433.
5. **Belza B.** The impact of fatigue on exercise performance. *Arthritis Care Res*. 1994;7(4):176-80.
6. **Calamaro CJ, Mason TB a, Ratcliffe SJ.** Adolescents living the 24/7 lifestyle: effects of caffeine and technology on sleep duration and daytime functioning. *Pediatrics*. 2009;123(6):e1005-10. doi:10.1542/peds.2008-3641.
7. **Prat G, Adan A, Pérez-Pàmies M, Sànchez-Turet M.** Neurocognitive effects of alcohol hangover. *Addict Behav*. 2008;33(1):15-23. doi:10.1016/j.addbeh.2007.05.002.
8. **Dittner AJ, Wessely SC, Brown RG.** The assessment of fatigue: a practical guide for clinicians and researchers. *J Psychosom Res*. 2004;56(2):157-70.
9. **Ridsdale L, Evans a, Jerrett W, Mandalia S, Osler K, Vora H.** Patients with fatigue in general practice: a prospective study. *BMJ*. 1993;307(6896):103-6.
10. **Wood MM, Elwood PC.** Symptoms of iron deficiency anaemia: A community survey. *Br J Prev Soc Med*. 1966;20:117-121.
11. **Smith DL.** Anemia in the elderly. *Am Fam Physician*. 2000;62(7):1565-72.
12. **Nijrolder I, van der Windt D, de Vries H, van der Horst H.** Diagnoses during follow-up of patients presenting with fatigue in primary care. *CMAJ*. 2009;181(10):683-7. doi:10.1503/cmaj.090647.
13. **Targum SD, Fava M.** Fatigue as a Residual Symptom of Depression. *Innov Clin Neurosci*. 2011;8(10):40-43.
14. **McDonnell SM, Preston BL, Jewell SA, et al.** A survey of 2,851 patients with hemochromatosis: symptoms and response to treatment. *Am J Med*. 1999;106(6):619-24.

15. **Schümann K, Elsenhans B, Mäurer a.** Iron supplementation. *J Trace Elem Med Biol.* 1998;12(3):129-40. doi:10.1016/S0946-672X(98)80001-1.
- Other signs of ID**
1. **Revez L, Gyte G, Cuervo L.** Treatments for iron-deficiency anaemia in pregnancy (Review). *Cochrane Collab.* 2010;(1).
  2. **Wood MM, Elwood PC.** Symptoms of iron deficiency anaemia: A community survey. *Br J Prev Soc Med.* 1966;20:117-121.
  3. **Stoltzfus R, Edward-Raj A.** Clinical pallor is useful to detect severe anemia in populations where anemia is prevalent and severe. *J Nutr.* 1999;129(May):1675-1681.
  4. **McDermid J, Lönnerdal B.** Iron. *Adv Nutr.* 2012;(1):532-533. doi:10.3945/an.112.002261.Table.
  5. **Osaki T, Ueta E, Arisawa K, Kitamura Y, Matsugi N.** The pathophysiology of glossal pain in patients with iron deficiency and anemia. *Am J Med Sci.* 1999;318(5):324-9.
  6. **Stein J, Hartmann F, Dignass AU.** Diagnosis and management of iron deficiency anemia in patients with IBD. *Nat Rev Gastroenterol Hepatol.* 2010;7(11):599-610. doi:10.1038/nrgastro.2010.151.
  7. **Scully C.** ABC of oral health: Mouth ulcers and other causes of orofacial soreness and pain. *Bmj.* 2000;321(7254):162-165. doi:10.1136/bmj.321.7254.162.
  8. **World Health Organization.** *Iron deficiency anaemia. Assessment, prevention and control: A guide for programme managers.*; 2001:1-114.
  9. **Simpson E, Mull JD, Longley E, East J.** Pica during pregnancy in low-income women born in Mexico. *West J Med.* 2000;173(1):20-25.
  10. **Lacey EP.** Broadening the perspective of pica: literature review. *Public Health Rep.* 1990;105(1):29-35.
  11. **Wang J, O'Reilly B, Venkataraman R, Mysliwiec V, Mysliwiec A.** Efficacy of iron in patients with restless legs syndrome and a low-normal ferritin: A randomized, double-blind, placebo-controlled study. *Sleep Med.* 2009;10(9):973-5. doi:10.1016/j.sleep.2008.11.003.
  12. **Sun ER, Chen CA, Ho G, Earley CJ, Allen RP.** Iron and The Restless Legs Syndrome. *Sleep.* 1998;21(4):381-387.
  13. **Stein J, Dignass A.** Management of iron deficiency anemia in inflammatory bowel disease—a practical approach. *Ann Gastroenterol.* 2012;26:1-10.
  14. **Trost LB, Bergfeld WF, Calogeras E.** The diagnosis and treatment of iron deficiency and its potential relationship to hair loss. *J Am Acad Dermatol.* 2006;54(5):824-44.
  15. **Cashman MW, Sloan SB.** Nutrition and nail disease. *Clin Dermatol.* 2010;28(4):420-5.
  16. **Love AL, Billett HH.** Obesity, bariatric surgery, and iron deficiency: true, true, true and related. *Am J Hematol.* 2008;83(5):403-9. doi:10.1002/ajh.21106.
  17. **Vukovi -Cvetkovi V, Plavec D, Lovrenci -Huzjan A, Galinovi I, Seri V, Demarin V.** Is iron deficiency anemia related to menstrual migraine? Post hoc analysis of an observational study evaluating clinical characteristics of patients with menstrual migraine. *Acta Clin Croat.* 2010;49(4):389-94.
  18. **Dhur A, Galan P, Hercberg S.** Iron status, immune capacity and resistance to infections. *Comp Biochem Physiol A Comp Physiol.* 1989;94(1):11-9.
  19. **Paterson JA, Davis J, Gregory M, et al.** A study on the effects of low haemoglobin on postnatal women. *Midwifery.* 1994;10(2):77-86.
  20. **Janis M.** Supportive Oncology Iron Deficiency Anemia in Cancer Patients. *Oncol Hematol Rev.* 2012;8(2):74-80.
  21. **Pasricha S-R, Hayes E, Kalumba K, Biggs B-A.** Effect of daily iron supplementation on health in children aged 4–23 months: a systematic review and meta-analysis of randomised controlled trials. *Lancet Glob Heal.* 2013;1(2):e77-e86. doi:10.1016/S2214-109X(13)70046-9.
  22. **Radlowski EC, Johnson RW.** Perinatal iron deficiency and neurocognitive development. *Front Hum Neurosci.* 2013;7:1-11.
  23. **Pinero DJ, Connor JR.** Iron in the Brain: An Important Contributor in Normal and Diseased States. *Neurosci.* 2000;6(6):435-453.
  24. **Albacar G, Sans T, Martin-Santos R, et al.** An association between plasma ferritin concentrations measured 48 h after delivery and postpartum depression. *J Affect Disord.* 2011;131:136-42. doi:10.1016/j.jad.2010.11.006.
  25. **Bhattacharyya PC, Nayak M.** Anaemia in elderly. *Med Updat* 2010. 2010;20:571-576.

**Always read the label. Use only as directed. Incorrect use could be harmful.  
If symptoms persist, see your healthcare professional.**

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