FEDERAZIONE
ITALIANA
SPORT
ORIENTAMENTO

VITAMINA C E FERRO

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Quali vitamine esistono?

Idrosolubili

Nome generico delle vitamine	Nomi chimici dei vitameri (lista non completa)	Solubilità	Dose giornaliera raccomandata (maschio, età tra i 19 e i 70)[8]	Malattia da mancanza	Livello massimo (UL/giorno)[8]	Malattia da sovradosaggio
Vitamina B_1	Tiamina	Acqua	1,2 mg	Beriberi, Sindrome di Wernicke-Korsakoff	N/D[10]	Sonnolenza o rilassamento muscolare con grandi dosi.[11]
Vitamina B_2	Riboflavina	Acqua	1,3 mg	Ariboflavinosi, glossite, cheilite angolare	N/D	
Vitamina B_3	Niacina (o acido nicotinico), niacinamide (o nicotinamide)	Acqua	16,0 mg	Pellagra	35,0 mg	Danni al fegato (dose > 2g/giorno)[12] e altri disturbi
Vitamina B_5	Acido pantotenico	Acqua	5,0 mg[13]	Parestesia	N/D	Diarrea; possibile nausea e bruciore di stomaco.[14]
Vitamina B_6	Piridossina, piridossale, piridossamina	Acqua	1,3–1,7 mg	Anemia[15] neuropatia periferica.	100 mg	Danneggiamento della propriocezione, danni ai nervi (dosi > 100 mg/day)
Vitamina B_7	Biotina	Acqua	30,0 µg	Dermatite, enterite	N/D	
Vitamina B_9	Acido folico, acido folinico	Acqua	0,4 mg	Anemia megaloblastica e la carenza durante la gravidanza è associata a difetti nel nascituro, come difetti al tubo neurale	1.000 µg	Molti sintomi della mancanza della vitamina B_{12}; altri disturbi.
Vitamina B_{12}	Cobalamina, idrossicobalamina, metilcobalamina	Acqua	2.4 µg	Anemia megaloblastica[16]	N/D	Rash simile all'acne [la causalità non è completamente stabilita].
Vitamina C	Acido ascorbico	Acqua	90,0 mg	Scorbuto	2.000 mg	Megadosi di vitamina C

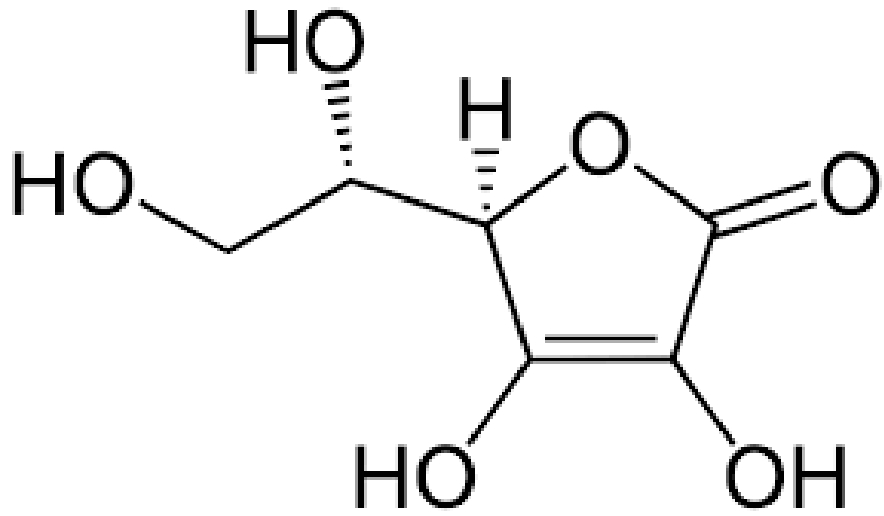
Quali vitamine esistono?

LIPOSOLUBILI

Vitamina A	Retinolo, retinale e quattro carotenoidi incluso il beta-carotene	Grasso	0,9 mg	Cecità notturna, ipercheratosi, e cheratomalacia[9]	3.000 µg	Ipervitaminosi A	Fegato, arance, frutta gialla matura, ortaggi a foglia, carote, zucca, spinaci, pesce, latte di soia, latte
Vitamina D	Colecalciferolo (D_3), Ergocalciferolo (D_2)	Grasso	10 µg[17]	Rachitismo e osteomalacia	50 µg	Ipervitaminosi D	Pesce, uova, fegato, funghi
Vitamina E	Tocoferoli, tocotrienoli	Grasso	15.0 mg	La mancanza è estremamente rara; sterilità nei maschi e aborti nelle donne, media anemia emolitica nei neonati.[18]	1.000 mg	Un vasto studio randomizzato ha dimostrato un aumento dell'insufficienza cardiaca congestizia[19]	Molti frutti e verdure, noci e semi
Vitamina K	fillochinone (K_1), menachinoni (K_2)	Grasso	120 µg	Diatesi emorragica	N/D	Incremento della coagulazione del sangue nei pazienti che assumono coumadin.[20]	Verdure a foglia verde come spinaci, tuorli d'uovo, fegato

VITAMINA C

Acido ascorbico



Si trova naturalmente in:

agrumi, verdure verdi, peperoni, pomodori, patate, bacche

VITAMINA C

Acido ascorbico

Funzioni:

- antiossidante
- necessario per la sintesi di collagene, carnitina, cortisolo, alcuni neurotrasmettitori e l'assorbimento del ferro
- serve per mantenere il sistema immunitario in situazioni di stress (pe. Training intenso)

Vitamina C

- Viene eliminata attraverso l'urina
- Non viene "immagazzinata"

- Quasi tutte le fonti scientifiche ribadiscono che NON c'è bisogno di integrazione se una persona segue una dieta equilibrata

  ma questo vale anche per gli sportivi????

Vitamina C

la funzione antiossidante

…."Acute exercise is known to increase levels of lipid peroxide by-products (13), but also results in a net increase in native antioxidant system functions and reduced lipid peroxidation.(14) Thus, a well-trained athlete may have a more developed endogenous antioxidant system than a less-active individual and may not benefit from antioxidant supplemen-tation, especially if consuming a diet high in antioxidant rich foods."

There is also some evidence that antioxidant supplementation may negatively influence training adaptations.(15)

The safest and most effective strategy regarding micronutrient antioxidants is to consume a well-chosen diet containing antioxidant-rich foods. (12 - Nutrition and Athletic performance, Joint position statement, American College of Sports medicine, Academy of nutrition and dietetics , dietitians of Canada, 2016)

Vitamina C

la funzione antiossidante

"Vitamin C decreases oxidative stress taken in doses of 0.2 to 1 g/day . Vitamin C in larger doses appears to reduce training-induced adaptations by reducing mitochondrial biogenesis or by possibly altering vascular function (>1g/day). A small dose of vitamin C (0.2 g/day), provided by five servings of fruit and vegetables daily, may be sufficient to reduce oxidative stress but not past a threshold that will impair optimal training adaptations."

"Short-term intakes (1 to 2 wk) of >0.2 g daily may benefit athletes during times of increased stress (training camp, illness). Further research is required to clarify a dose-response and nutrient timing protocols on vitamin C." (8 Braakhuis, Andrea J. PhD, MND, APD. Effect of Vitamin C Supplements on Physical Performance. Current Sports Medicine Reports 11(4):p 180-184, July/August 2012.)

VITAMINA C

la funzione sul sistema immunitario

"Twenty-nine trial comparisons involving 11,306 participants contributed to the meta-analysis on the risk ratio (RR) of developing a cold whilst taking vitamin C regularly over the study period. In the general community trials involving 10,708 participants, the pooled RR was 0.97 (95% confidence interval (CI) 0.94 to 1.00). Five trials involving a total of 598 marathon runners, skiers and soldiers on subarctic exercises yielded a pooled RR of 0.48 (95% CI 0.35 to 0.64).

Seven comparisons examined the effect of therapeutic vitamin C (3249 episodes). No consistent effect of vitamin C was seen on the duration or severity of colds in the therapeutic trials.

The majority of included trials were randomised, double-blind trials. The exclusion of trials that were either not randomised or not double-blind had no effect on the conclusions." (11 Vitamin C for preventing and treating the common cold, Harri Hemilä, Elizabeth Chalker, Version published: 31 January 2013)

Vitamina C

https://www.usada.org/spirit-of-sport/vitamin-c-supplements/

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Do Athletes Really Need Vitamin C Supplements to Stay Healthy?

Nutrition, Spirit of Sport / March 1, 2022

Vitamin C, also known as ascorbic acid, is a vital nutrient that the body can't create on its own. But do you need to take a vitamin C supplement to get enough? Will megadosing with vitamin C boost immunity and help you avoid colds and illness?

While vitamin C is critical for your immune system, the reality is that more isn't always better, and supplements always come with some amount of risk. Here's what you need to consider before taking a vitamin C supplement.

Vitamina C

ATTENZIONE:

Per via del deperimento dei suoli e i metodi di coltivazione "industriali" frutta e verdura NON hanno più lo stesso contenuto di micronutrienti del passato!!

Quindi sarebbe meglio:

frutta e verdura "locale", da contadini piccoli, orto privato, eventualmente biologico

Vitamina C

Riassumendo:

- Per la funzione antiossidante ("aiutare il recupero"):
  in generale no, ma forse potrebbe essere utile in periodi di stress fisico aumentato (campi d'allenamento...)
- Per la funzione "prevenzione" di sindrome influenzale"
  forse in situazioni di aumentato carico fisico
- Per la funzione "trattamento di sindrome influenzale"
  nessuna evidenza

Dosaggio: 1-2 g/die

Ferro

- fa parte di emoglobina nelle cellule rosse e la mioglobina

- serve per trasportare l'ossigeno ("energia") alle diverse cellule nel corpo

- Sintomi di deficit di Ferro: anemia, fatigue, mal di testa, insonnia

- cause per il deficit di ferro:

  mestruazioni, crescita (nei giovani), training in altura, emolisi per sovraccarico, sudore, urine, feci.

Ferro

- **Per trattare un' anemia ferrocarenziale il trattamento è di 3-6 mesi. Quindi conviene iniziare una terapia prima che si sviluppi l' anemia.**
  Reversing iron deficiency anemia can require 3 to 6 months; therefore, it is advantageous to begin nutrition intervention before IDA develops.(16,18)

- **Alcuni atleti sviluppano un abbassamento dell'emoglobina (transitorio!) all'inizio di allenamenti dovuto a emodiluzione, il quale non risponde a interventi nutrizionali. Sembra essere un adattamento al training aerobico e non influenza la performance.**
  Some athletes may experience a transient decrease in hemoglobin at the initiation of training due to hemodilution, known as "dilutional" or "sports anemia", and may not respond to nutrition intervention. These changes appear to be a beneficial adaptation to aerobic training and do not negatively impact performance. (17)

(12. Nutrition and Athletic performance, Joint position statement, American College of Sports medicine, Academy of nutrition and dietetics , dietitians of Canada, 2016 and Grozenski, Andrew MD1; Kiel, John DO, MPH, CAQ-SM2. Basic Nutrition for Sports Participation, Part 2: Vitamins and Minerals. Current Sports Medicine Reports 19(12):p 508-510, December 2020)

Ferro

- **Non c'è consenso su quale livello di ferritina corrisponde ad un valore "critico" per diagnosticare un deficit di ferro. Diverse ipotesi si aggirano tra 10 a 35ng/ml di ferritina. Le analisi devono essere interpretate nel contesto clinico globale, perche la ferritina è anche una proteina influenzata da altri fattori.**
  There is no agreement on the serum ferritin level that corresponds to a problematic level of iron depletion/deficiency, with various suggestions ranging from 10 to 35 ng/mL. (19) A thorough clinical evaluation in this scenario is warranted since ferritin is an acute-phase protein

(12. Nutrition and Athletic performance, Joint position statement, American College of Sports medicine, Academy of nutrition and dietetics , dietitians of Canada, 2016 and Grozenski, Andrew MD1; Kiel, John DO, MPH, CAQ-SM2. Basic Nutrition for Sports Participation, Part 2: Vitamins and Minerals. Current Sports Medicine Reports 19(12):p 508-510, December 2020)

Ferro

Come prenderlo:

- Non immediatamente dopo attivitá fisica intensa per possibili livelli aumentati di hepcidina (la quale blocca l'assorbimento del ferro) (12)
- Combinato con Vitamina C per favorire l'assorbimento
- A digiuno (1 ora prima o due ore dopo un pasto), soprattutto NON con latticini, caffè, tè, cola
- Attenzione iniezioni di ferro – minimo rischio di anafilassia e se infusione paravenosa rischio di necrosi tissutale

Bibliografia

•1.McElheny KD, Little D, Taylor D, Manzi JE. Communicable Illness Mitigation Strategies for Traveling Elite Sporting Organizations. Sports Health. 2022;14(4):532-537. doi:10.1177/19417381211032226

•2. Journal of Physical Education and Sport ® (JPES), Vol. 22 (issue 12), Art 393, pp. 3101-3113, December 2022 Original Article What alternative supplements are prominent between some of female athletes?: A systematic review SEPTA KATMAWANTI1*, SAREENA HANIM2, SITI KHUZAIMAH AHMAD SHARONI3, ROSUZEITA FAUZI4, DEA AFLAH SAMAH5, OKTAVIA SRI WAHYUNI6,

•3. Hansen M, Bangsbo J, Jensen J, Bibby BM, Madsen K. Effect of whey protein hydrolysate on performance and recovery of top-class orienteering runners. Int J Sport Nutr Exerc Metab. 2015 Apr;25(2):97-109. doi: 10.1123/ijsnem.2014-0083. Epub 2014 Jul 14. PMID: 25029703.

•4. Nicholas C. Legal nutritional supplements during a sporting event. Essays Biochem. 2008;44:45-61. doi: 10.1042/BSE0440045. PMID: 18384282.

•5. Front. Immunol., 01 April 2021 Sec. Nutritional Immunology Volume 12 - 2021 https://doi.org/10.3389/fimmu.2021.659001 Commentary: The Long History of Vitamin C: From Prevention of the Common Cold to Potential Aid in the Treatment of COVID-19 Harri Hemilä1*† and Elizabeth Chalker2†

6. A Commentary on The Long History of Vitamin C: From Prevention of the Common Cold to Potential Aid in the Treatment of COVID-19 by Cerullo G, Negro M, Parimbelli M, Pecoraro M, Perna S, Liguori G, Rondanelli M, Cena H, D'Antona G. Front Immunol (2020) 11:574029. doi: 10.3389/fimmu.2020.574029

•7. Grozenski, Andrew MD1; Kiel, John DO, MPH, CAQ-SM2. Basic Nutrition for Sports Participation, Part 2: Vitamins and Minerals. Current Sports Medicine Reports 19(12):p 508-510, December 2020. | DOI: 10.1249/JSR.0000000000000779

•8. Braakhuis, Andrea J. PhD, MND, APD. Effect of Vitamin C Supplements on Physical Performance. Current Sports Medicine Reports 11(4):p 180-184, July/August 2012. | DOI: 10.1249/JSR.0b013e31825e19cd

•9. https://www.usada.org/spirit-of-sport/vitamin-c-supplements/

•10. https://www.cibo360.it/alimentazione/dietologia/dieta_ideale/attendibilita_studi_scientifici.htm

•11. Vitamin C for preventing and treating the common cold, Harri Hemilä, Elizabeth Chalker, Version published: 31 January 2013

•12. Nutrition and Athletic performance, Joint position statement, American College of Sports medicine, Academy of nutrition and dietetics, dietitians of Canada, 2016

•13.Peternelj TT, Coombes JS. Antioxidant supplementation during exercise training: beneficial or detrimental? Sports Medicine. 2011; 41(12):1043–1069.

•14. Watson TA, MacDonald-Wicks LK, Garg ML. Oxidative stress and antioxidants in athletes undertaking regular exercise training. International Journal of Sports Nutrition and Exercise Metabolism. 2005;15(2):131–146.

•15. Draeger CL, Naves A, Marques N, et al. Controversies of antioxidant vitamins supplementation in exercise: ergogenic or ergolytic effects in humans? Journal of the International Society of Sports Nutrition. 2014;11(1):4

•16. Lukaski HC. Vitamin and mineral status: effects on physical performance. Nutrition. 2004;20(7–8):632–644.

•17. Volpe SL, Bland E. Vitamins, Minerals, and Exercise. In: Rosenbloom CA, Coleman EJ, ed. Sports Nutrition: A Practice Manual for Professionals. 5th eds. Chicago: Academy of Nutrition and Dietetics; 2012:75–105.

•18. Haymes E. Iron. In: Driskell J, Wolinsky I, eds. Sports Nutrition: Vitamins and Trace Elements. New York, NY: CRC/Taylor & Francis; 2006:203–216.

•19. Peeling P, Dawson B, Goodman C, Landers G, Trinder D. Ath[1]letic induced iron deficiency: new insights into the role of in[1]flammation, cytokines and hormones. European Journal of Applied Physiology. 2008;103(4):381–391