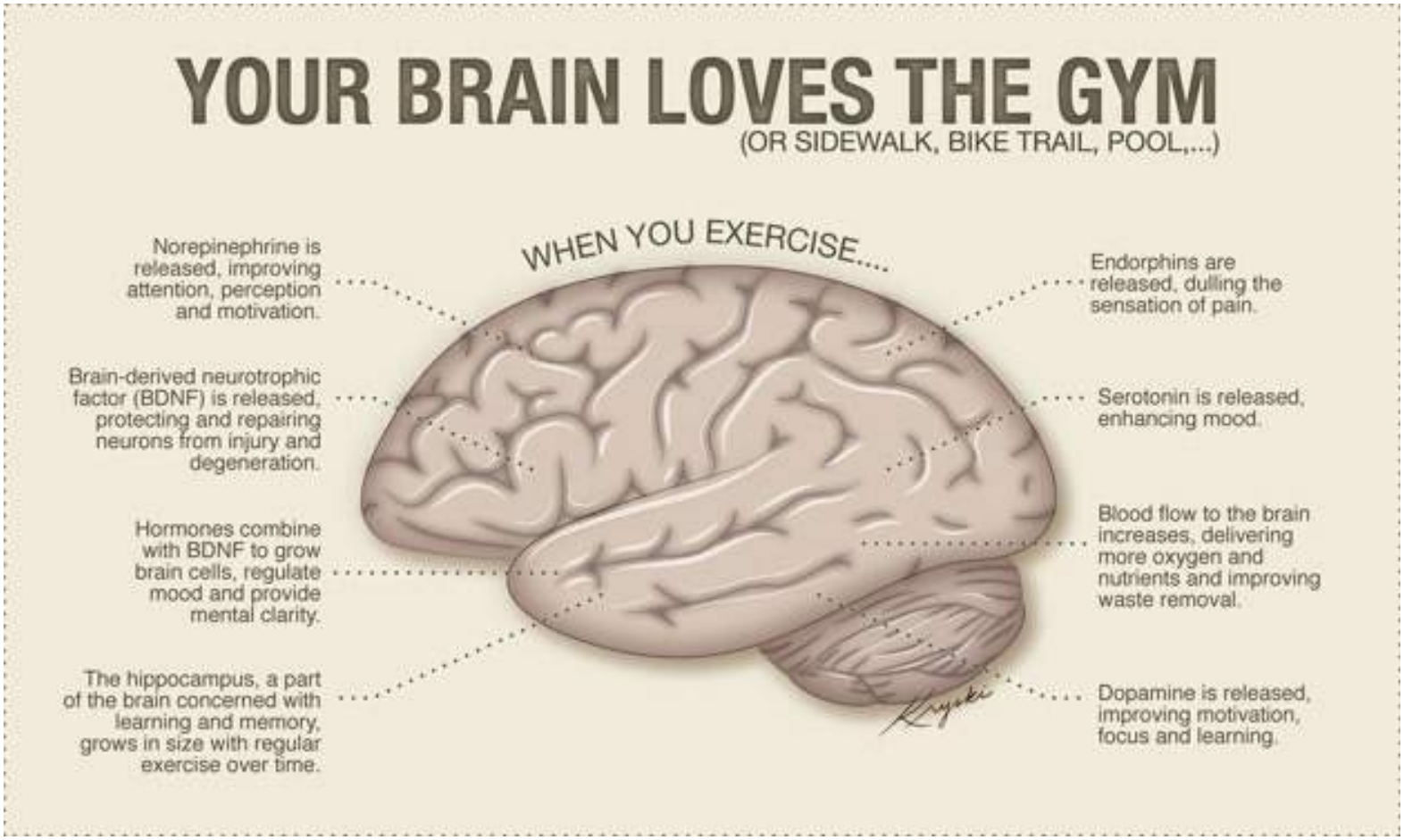
Esercizio, stress, cervello e immunità



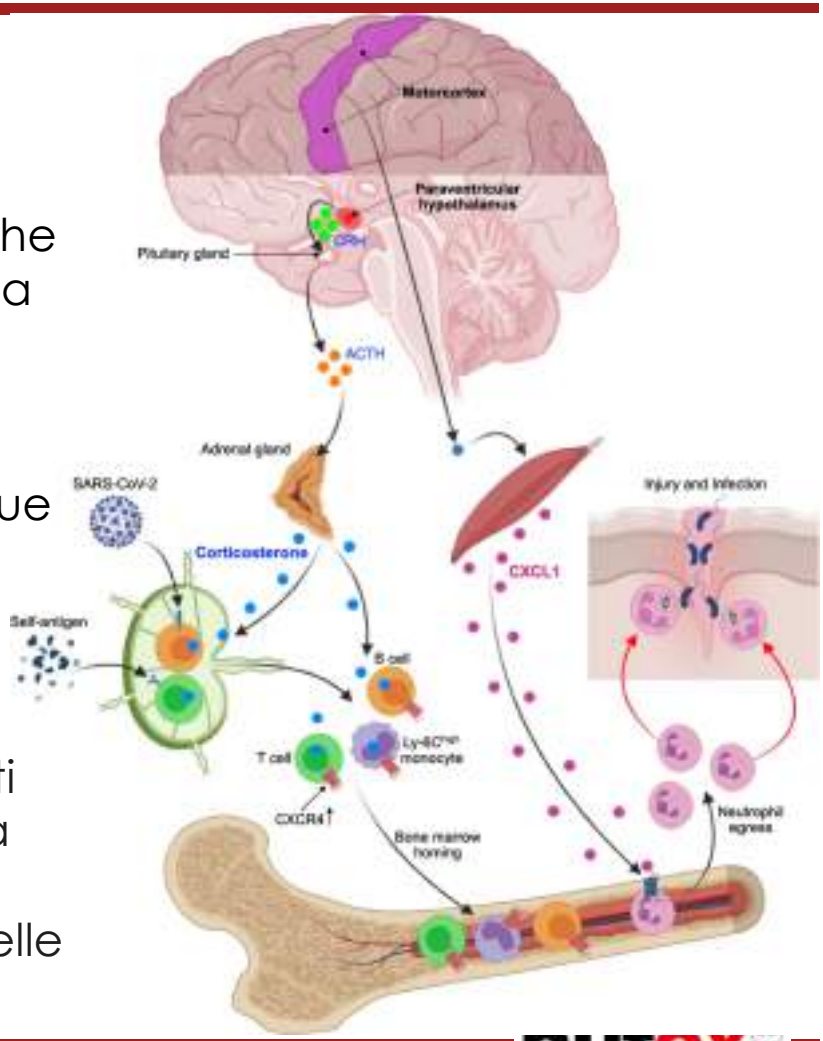
Esercizio, stress, cervello e immunità

Article

Brain motor and fear circuits regulate leukocytes during acute stress

Con sistemi chemogenetici e optogenetici si è dimostrato che I circuiti delle aree motorie fanno aumentare rapidamente la mobilizzazione dei neutrofili dal midollo osseo ai tessuti periferici tramite delle chemochine specifiche.
L'area paraventricolare dell'ipotalamo controlla l'uscita di monociti e linfociti dagli organi linfoidi secondari e dal sangue al midollo osseo tramite dei segnali legati ai gluccorticoidi

Questa doppia via dimostra che, da un lato, lo stress acuto modifica l'immunità innata riprogrammando i neutrofili e dirigendoli verso i siti di lesione. Dall'altro lato, gli spostamenti dei leucociti mediati dai neuroni dell'ormone di rilascio della corticotropina (CRH) proteggono dall'insorgenza di autoimmunità, ma indeboliscono l'immunità nei confronti delle infezioni da virus influenzali.



Poller et al. Nature. 2022 Jul;607(7919):578-584

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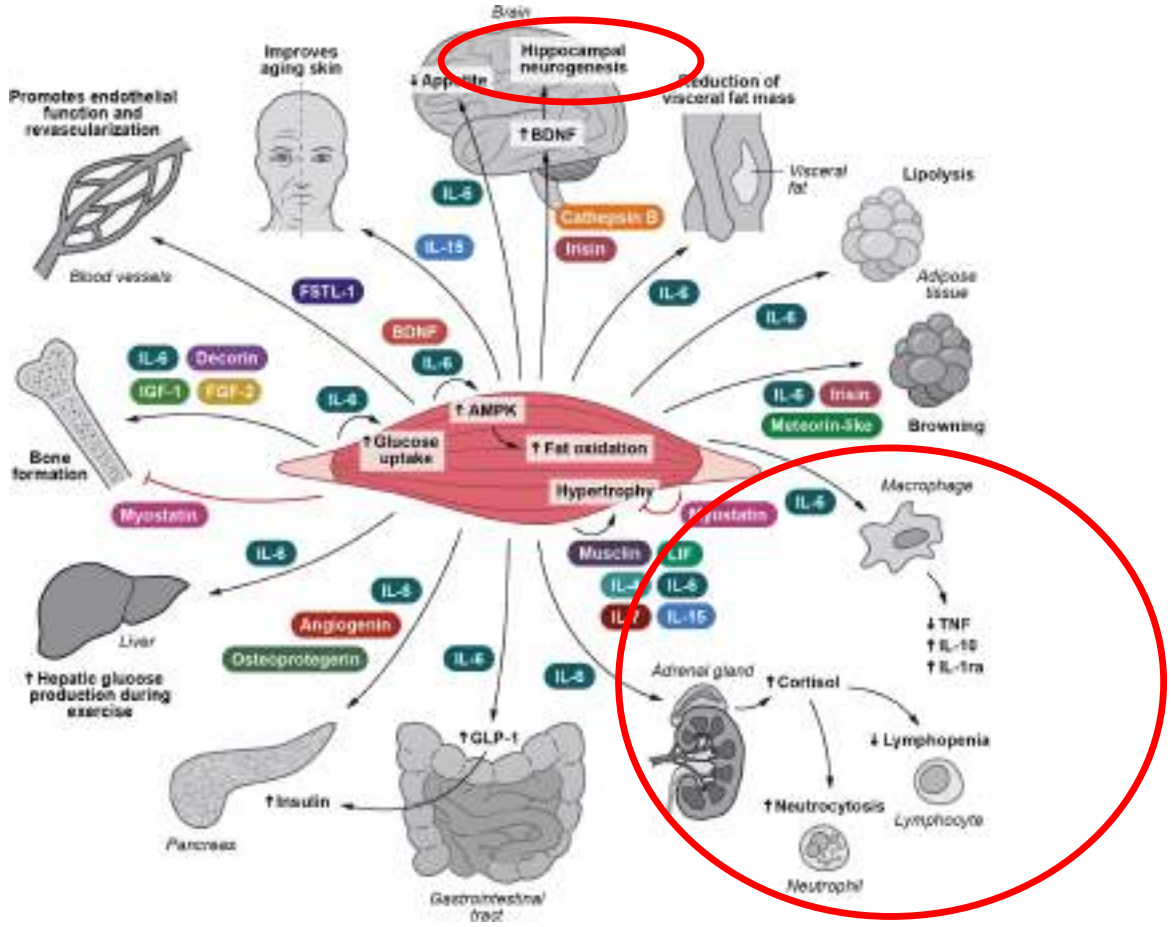
Esercizio fisico, stress e umore



Bay & Pedersen. Front Physiol. 2020 Sep 9;11:567881

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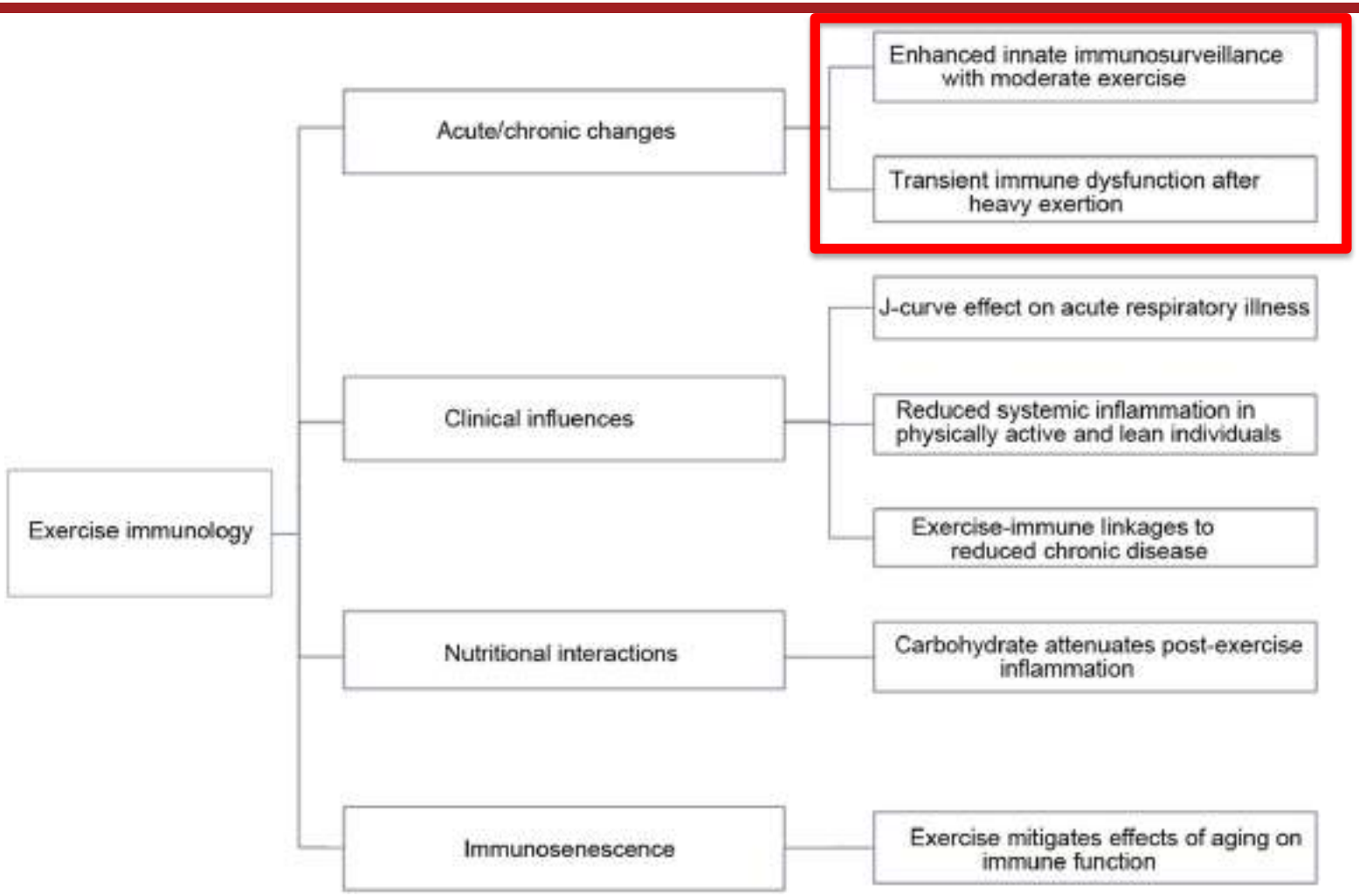
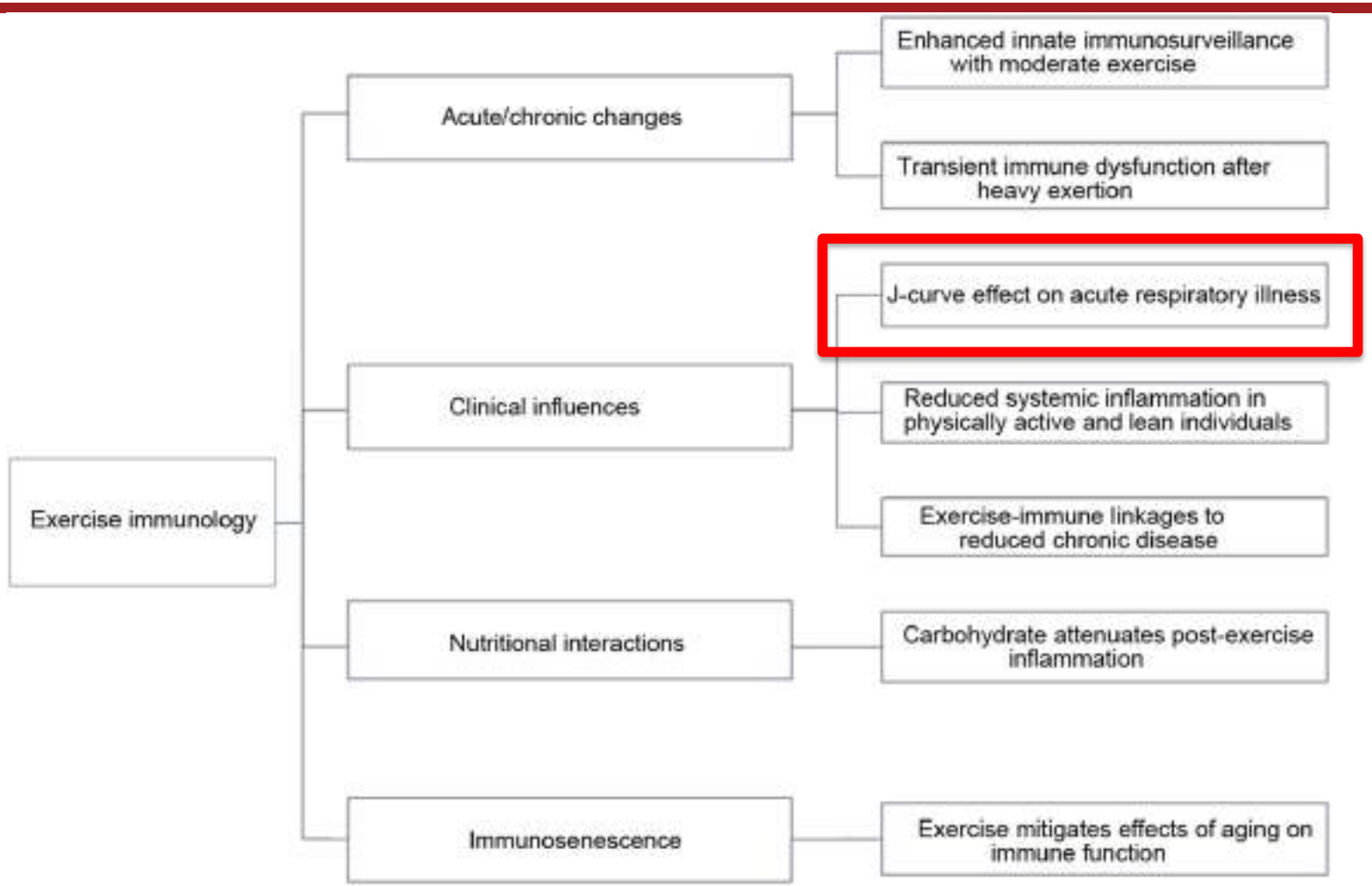
ESERCIZIO FISICO E IMMUNITÀ

Esercizio fisico e immunità



Nieman & Wentz J Sport Health Sci. 2019 May;8(3):201-217

Esercizio fisico e immunità



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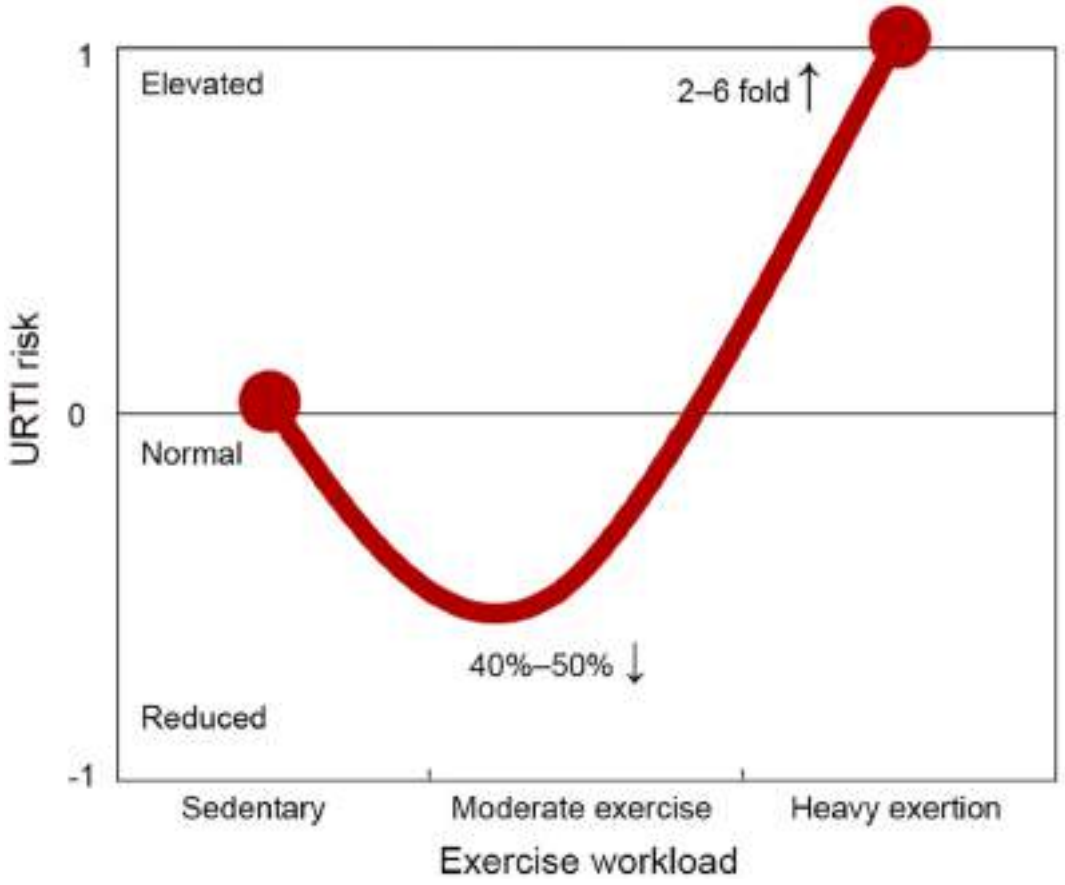
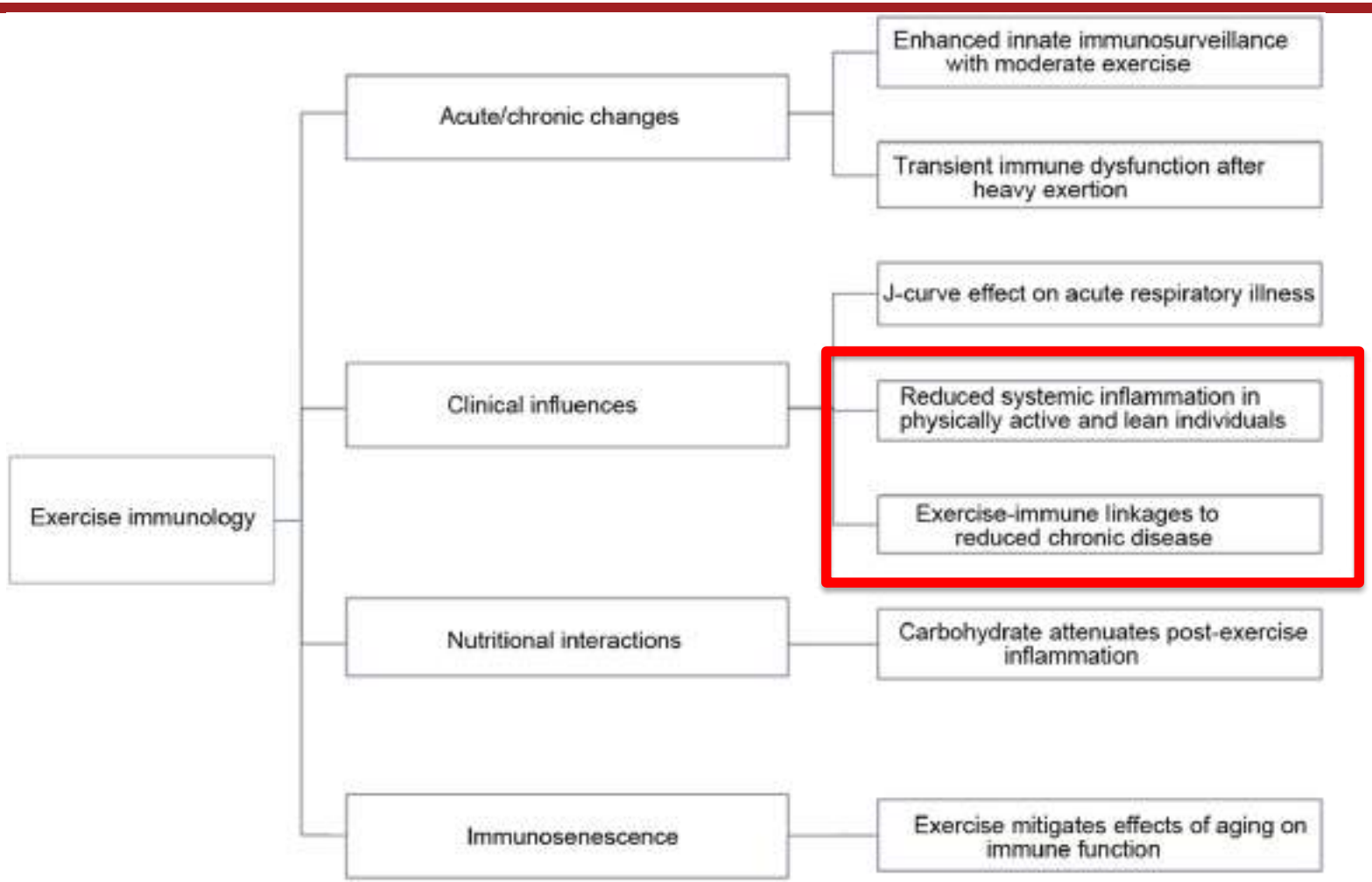
Esercizio fisico e immunità



Nieman & Wentz. J Sport Health Sci. 2019 May;8(3):201-217

Esercizio fisico e immunità



Nieman & Wentz J Sport Health Sci. 2019 May;8(3):201-217

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Esercizio fisico e immunità: in acuto

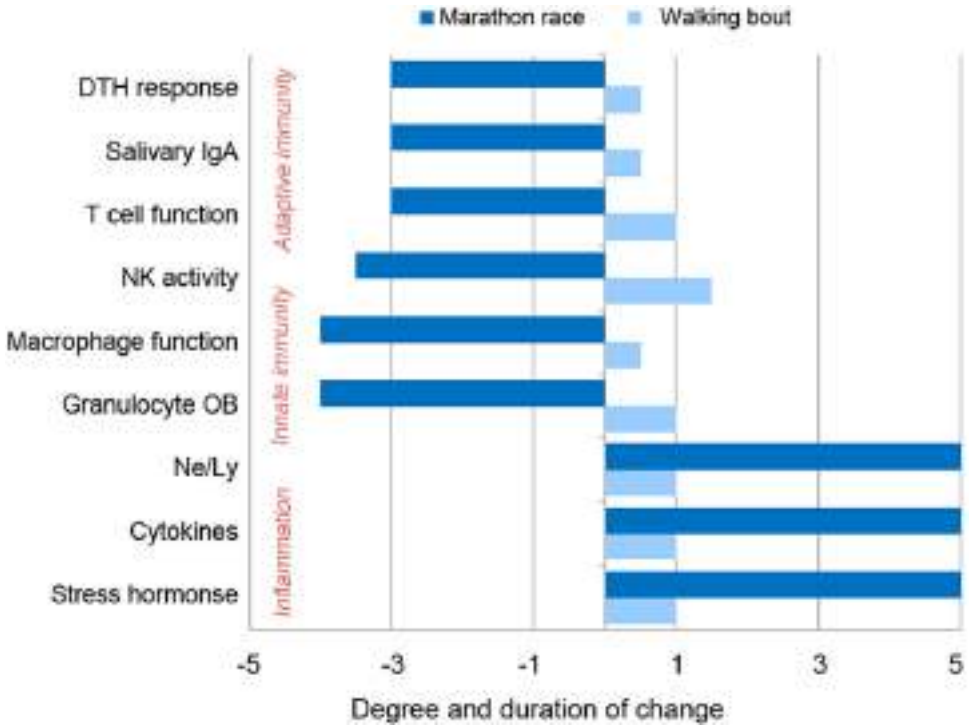
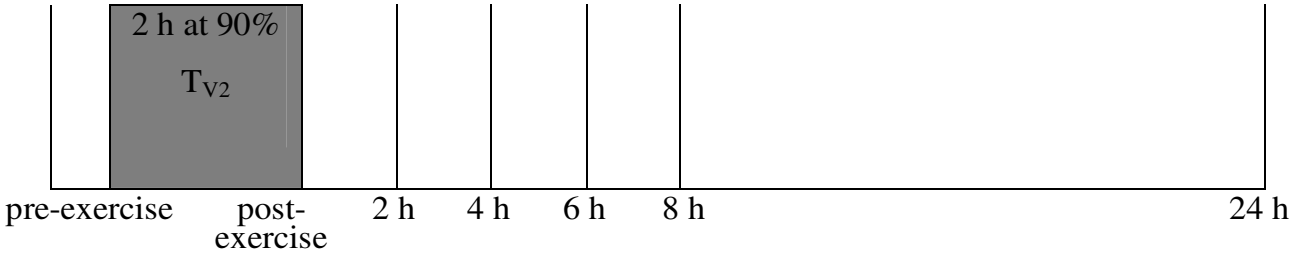
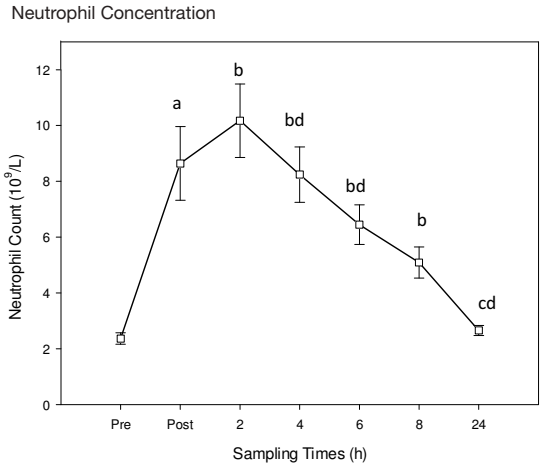


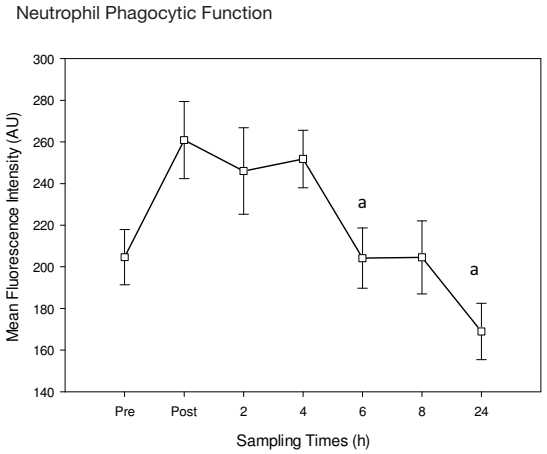
Fig. 4. The contrast in acute immune responses to heavy exertion (e.g., a marathon race) and a 30- to 45-min walking bout. DTH = delayed-type hypersensitivity; IgA = immunoglobulin A; Ne/Ly = neutrophil/lymphocyte ratio; NK = natural killer; OB = oxidative burst.

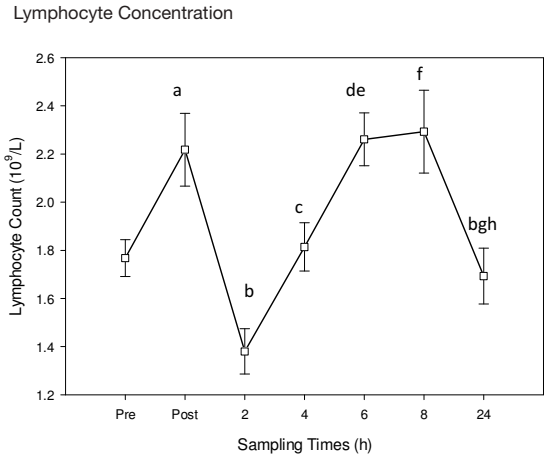
Nieman & Wentz J Sport Health Sci. 2019 May;8(3):201-217

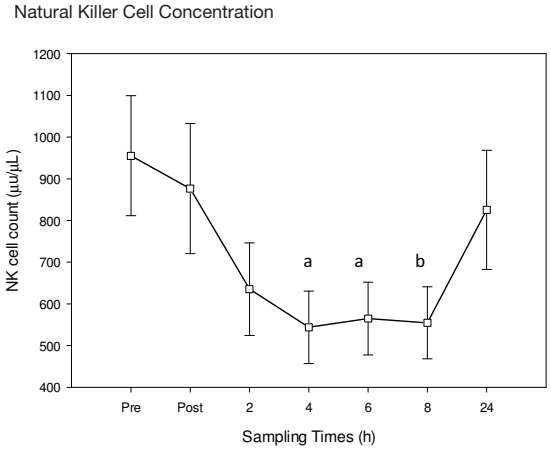
Esercizio fisico e immunità: in acuto





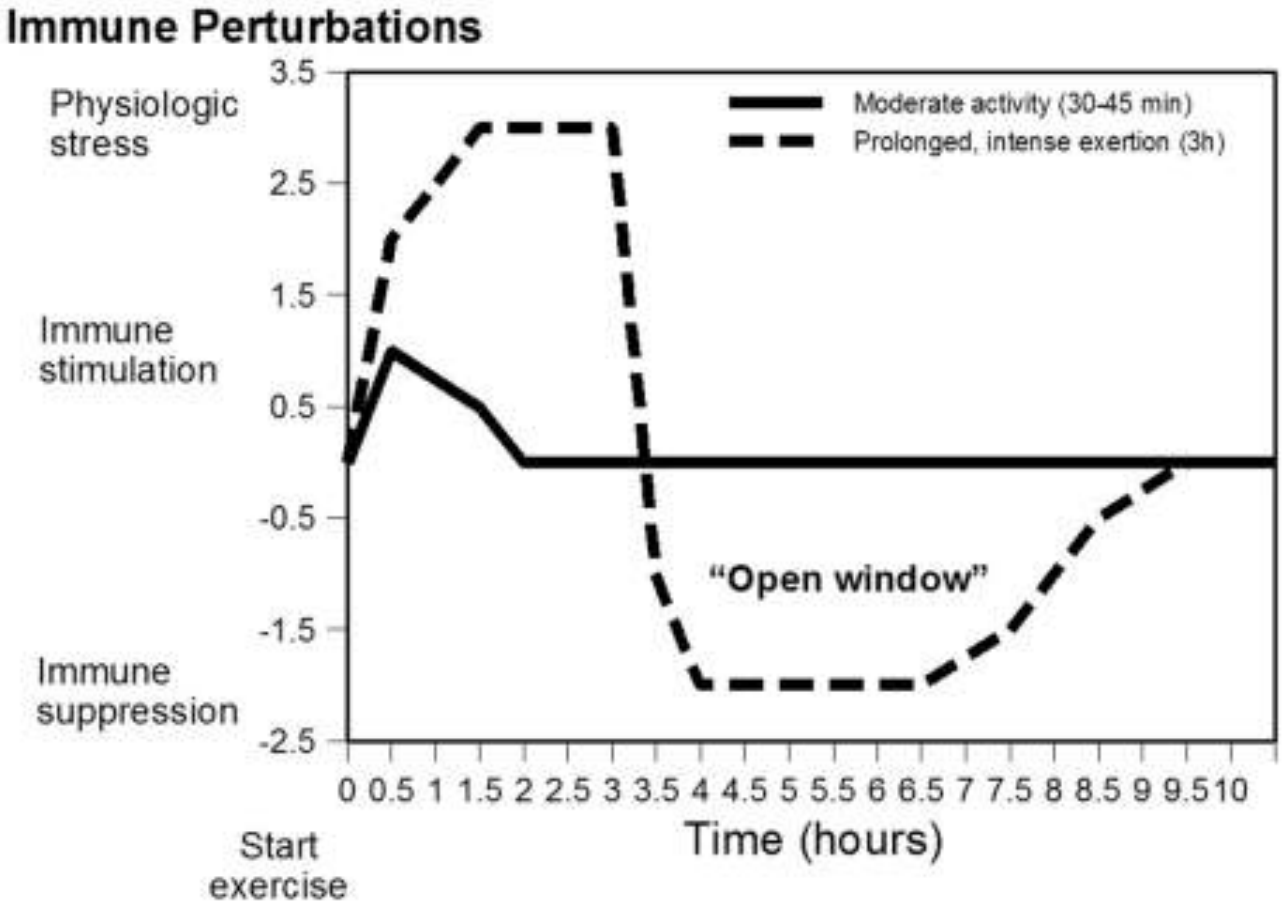






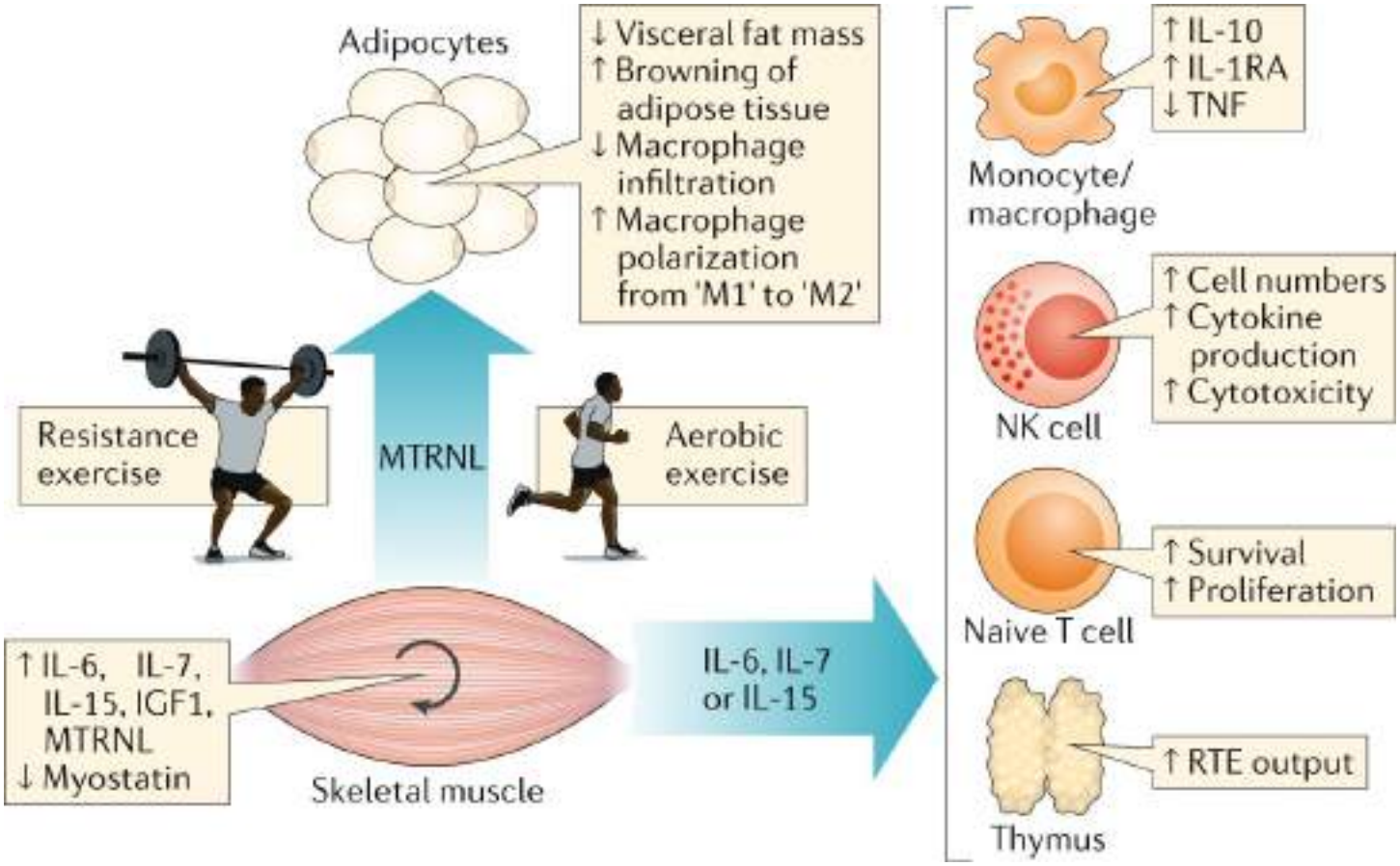
Kakanis et al. Exerc Immunol Rev. 2010;16:119-37

Esercizio fisico e immunità: in acuto



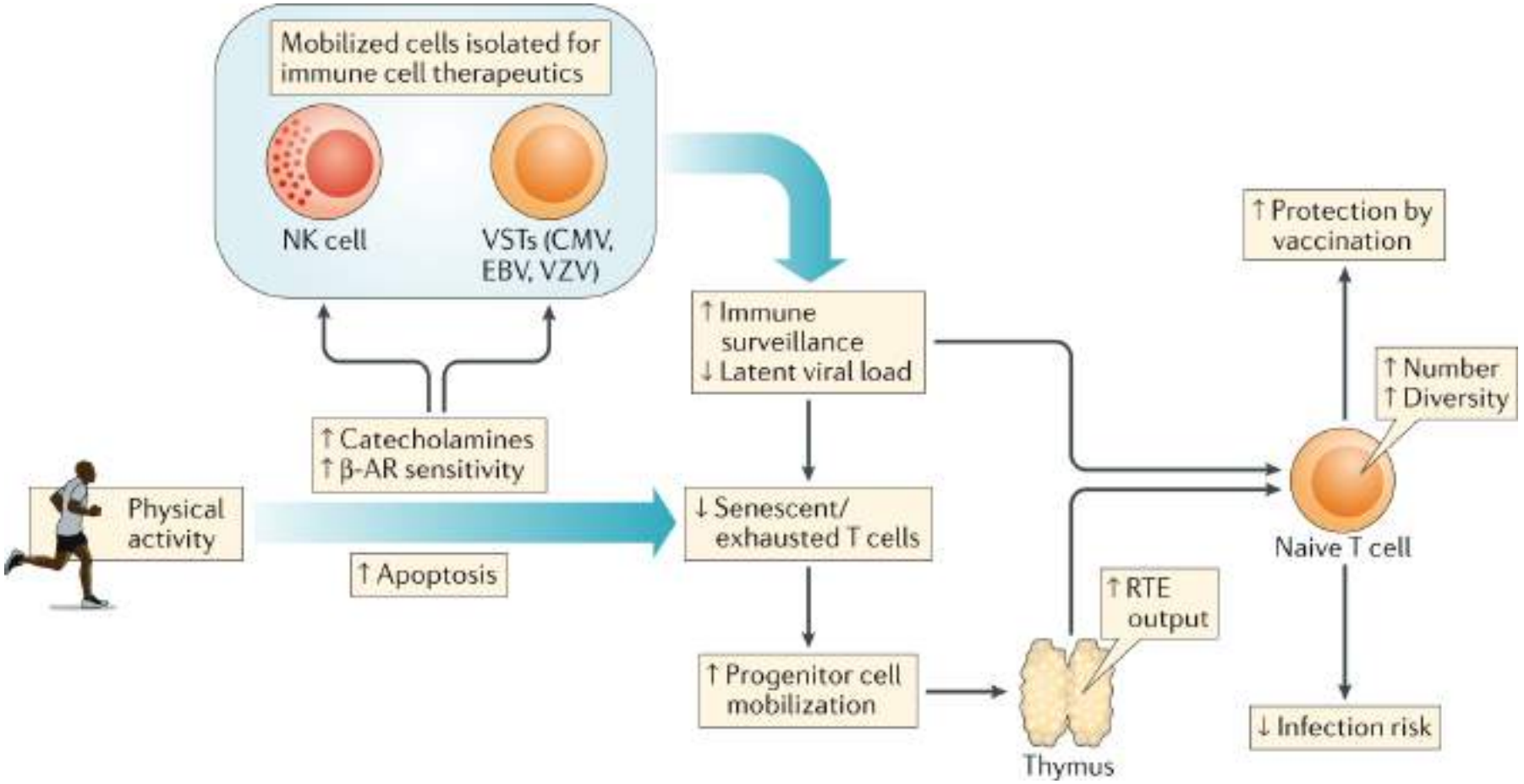
Nieman & Bishop. J Sports Sci. 2006 Jul;24(7):763-72

Esercizio fisico e immunità: in acuto



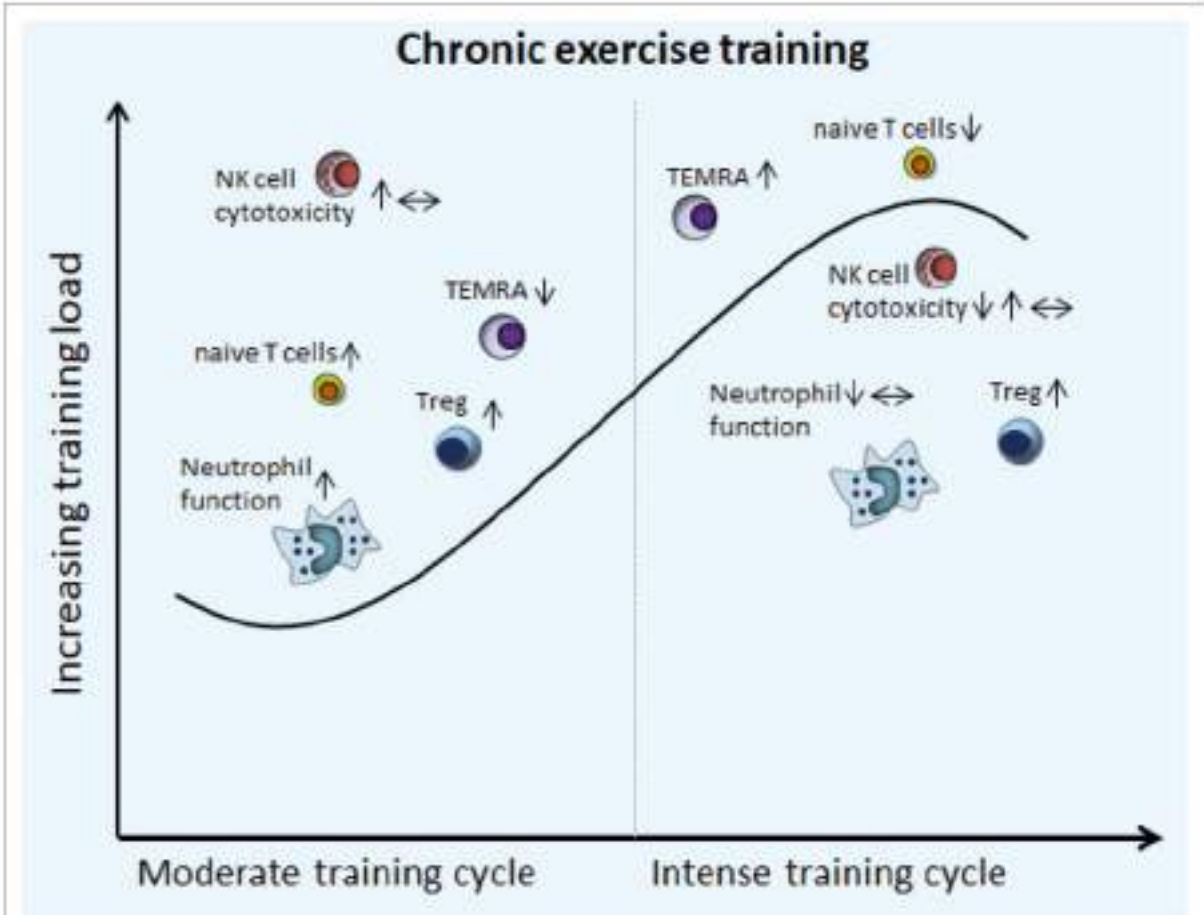
Duggal et al. Nat Rev Immunol. 2019 Sep;19(9):563-572

Esercizio fisico e immunità: in cronico



Duggal et al. Nat Rev Immunol. 2019 Sep;19(9):563-572

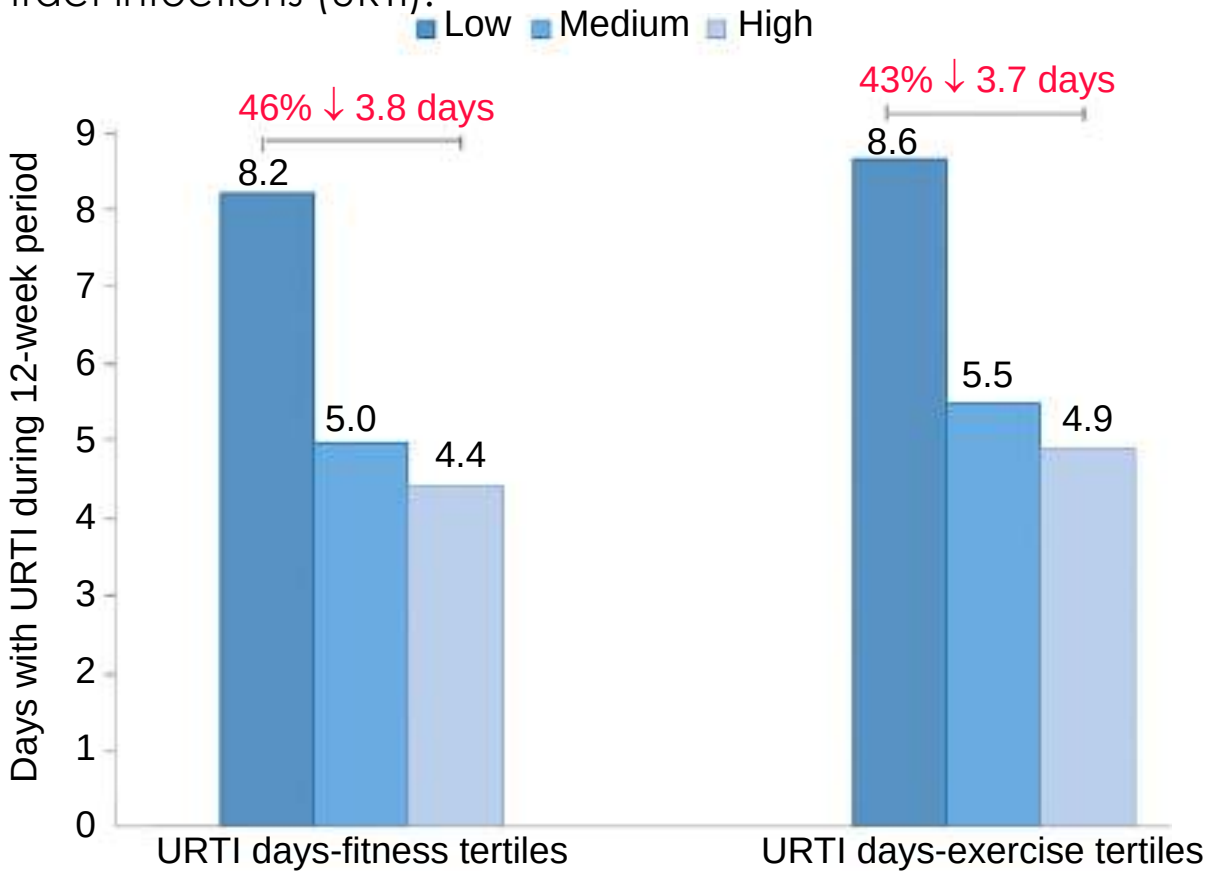
Esercizio fisico e immunità: in cronico



Alack et al . Dtsch Z Sportmed. 2019; 70: 250-260.

Esercizio fisico e immunità: in cronico

The upper tertiles of fitness and exercise frequency are associate with reduced numbers of days with upper respiratory tract infections (URTI).



Nieman et al. Br J Sports Med 2011;45:987–92

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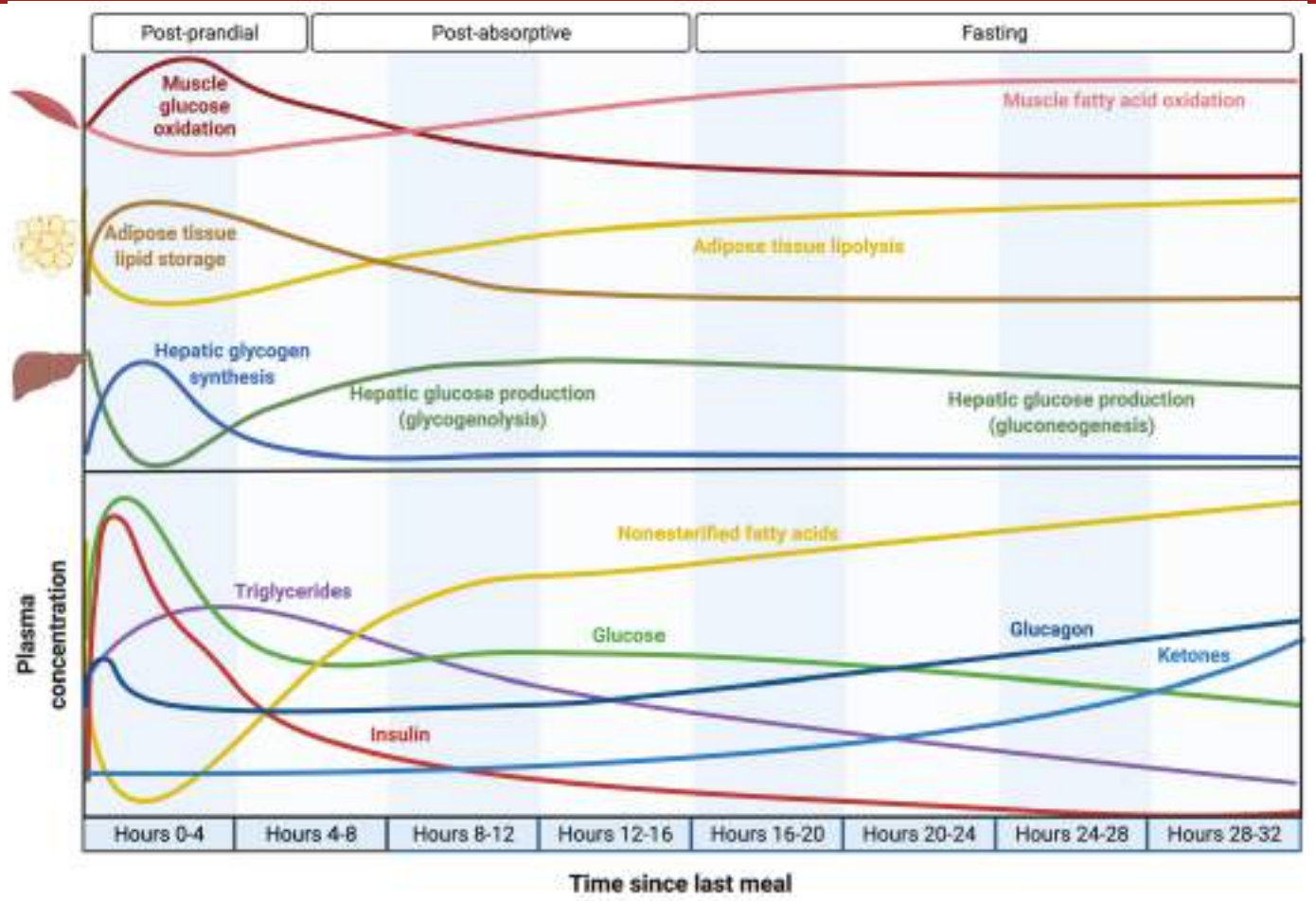
TRE, ESERCIZIO E IMMUNITÀ



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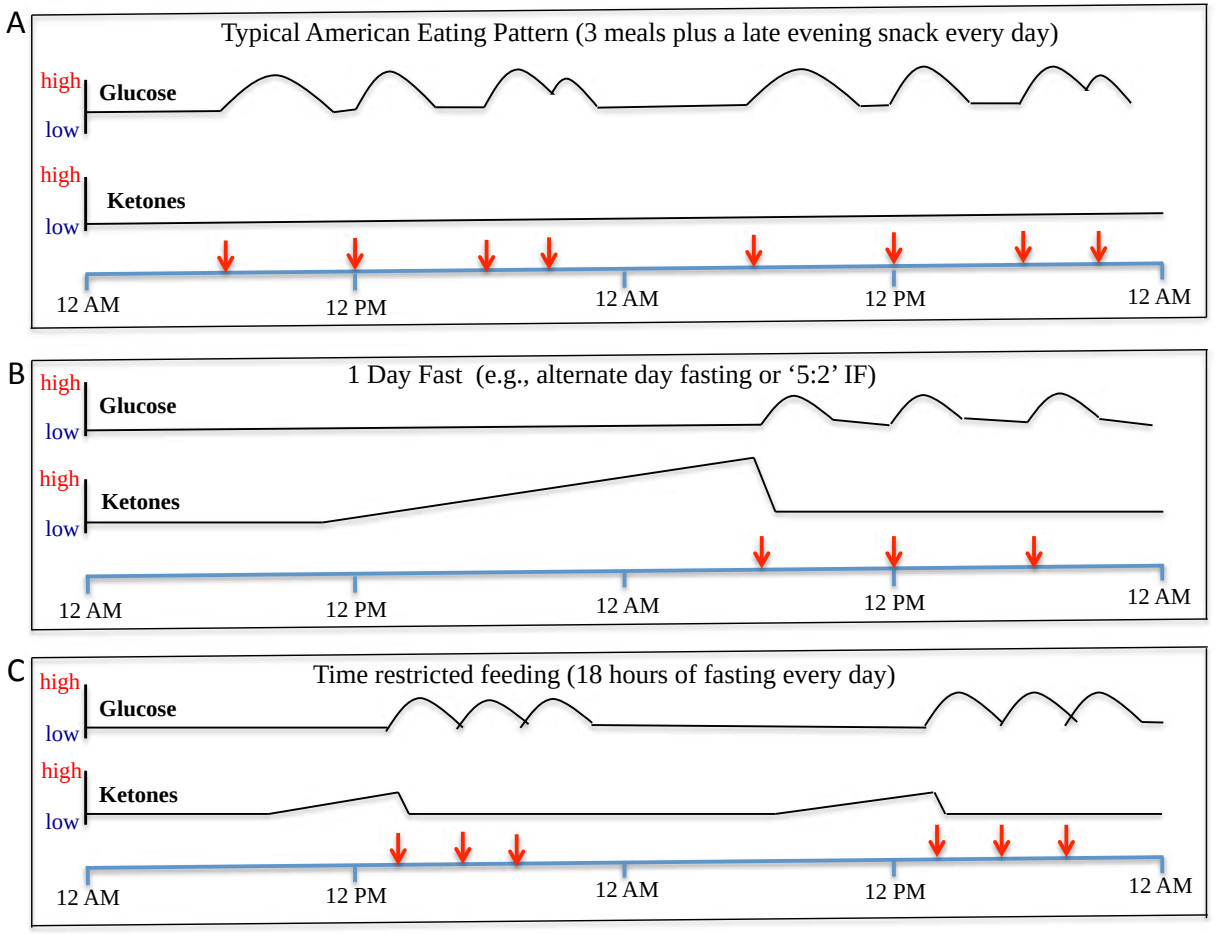
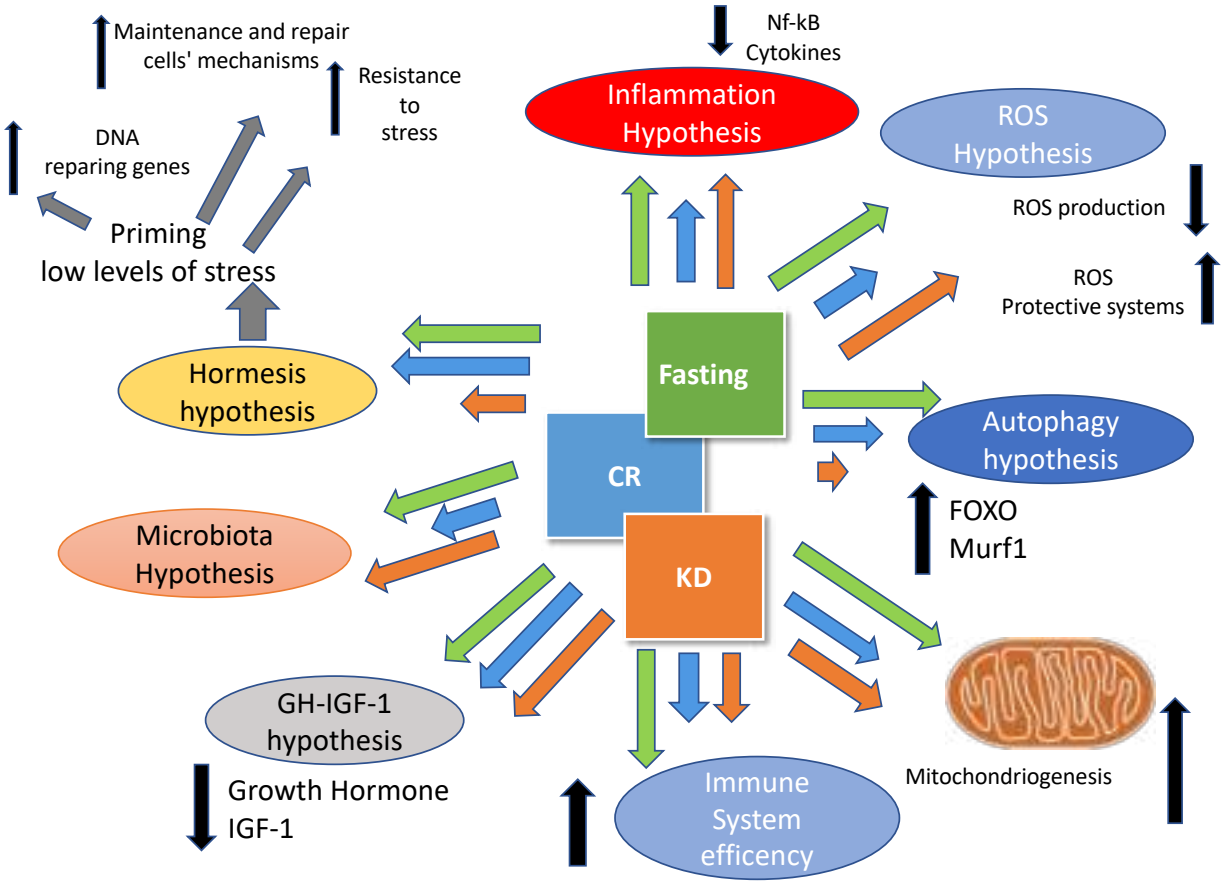
TRE e immunità



Mattson et al. Ageing Research Reviews, 31 Oct 2016, 39:46-58

TRE e immunità

TRE e immunità



Paoli et al. Nutrients 2019, Mar 28;11(4)

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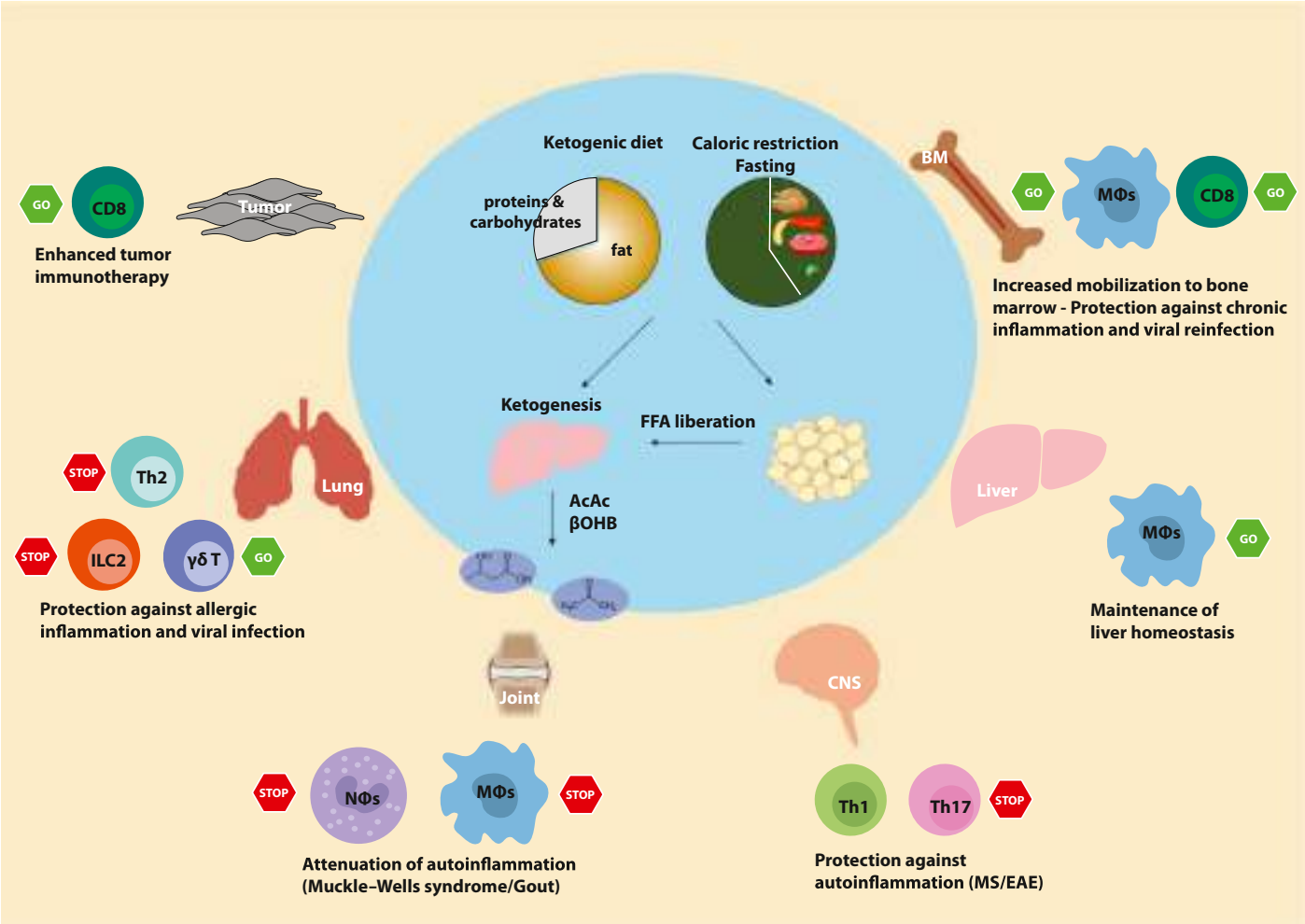
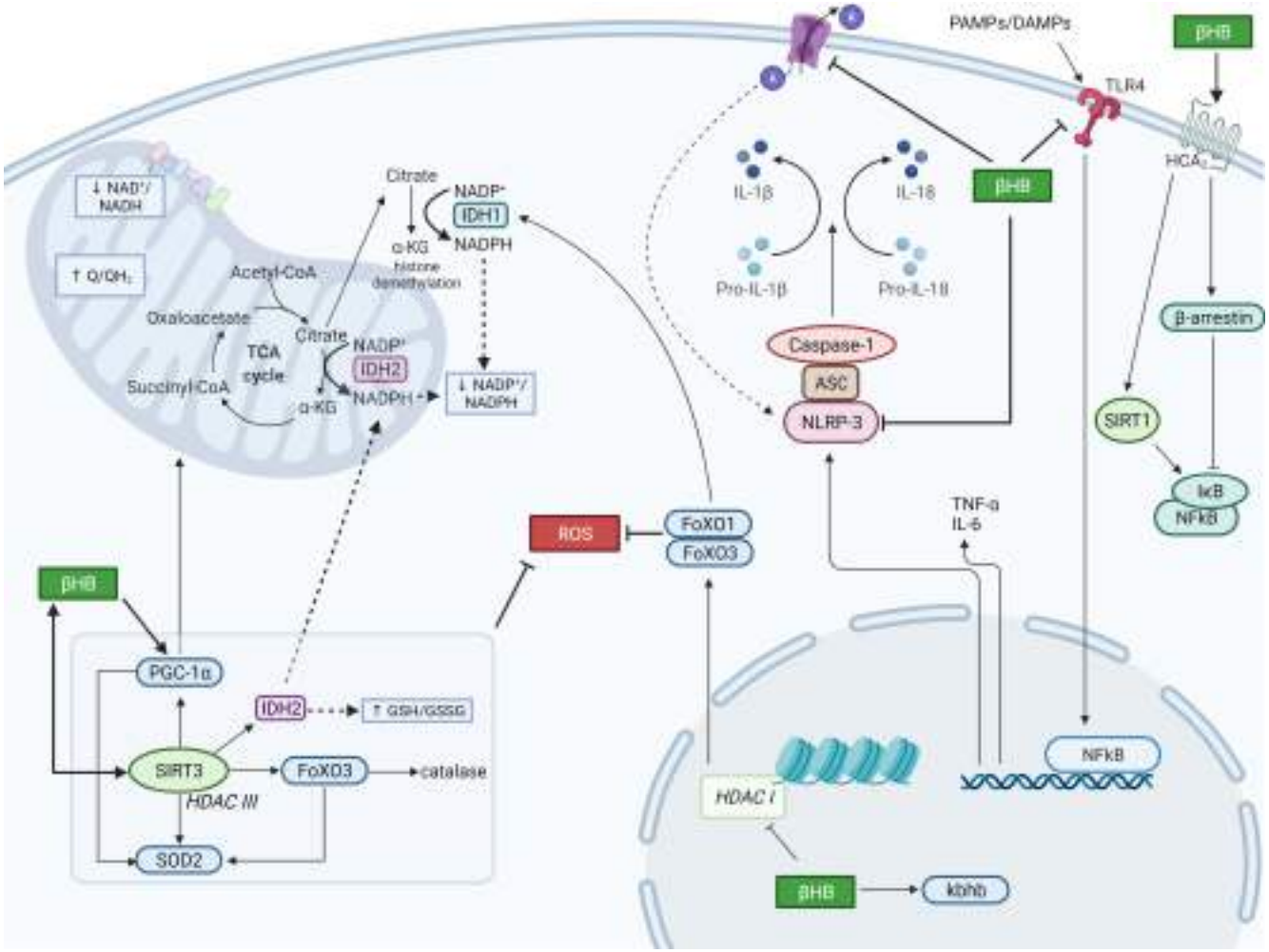
TRE e immunità



Wilhelm et al. Trends Immunol. 2021 May;42(5):389-400

TRE e immunità



Paoli et al. Trends Endocrinol Metab. 2024 Feb; 35(2): 125-141.

TRE, esercizio e immunità

Moro et al. Journal of the International Society of Sports Nutrition (2020) 17:65
https://doi.org/10.1186/s12970-020-00396-z

Journal of the International Society of Sports Nutrition

RESEARCH ARTICLE Open Access

Time-restricted eating effects on performance, immune function, and body composition in elite cyclists: a randomized controlled trial

Tatiana Moro[1], Grant Tinsley[2], Giovanni Longo[1], Davide Grigoletto[1], Antonino Bianco[3], Cinzia Ferraris[4], Monica Guglielmetti[4], Alessandro Veneto[4], Anna Tagliabue[4], Giuseppe Marcolin[1] and Antonio Paoli[1*]

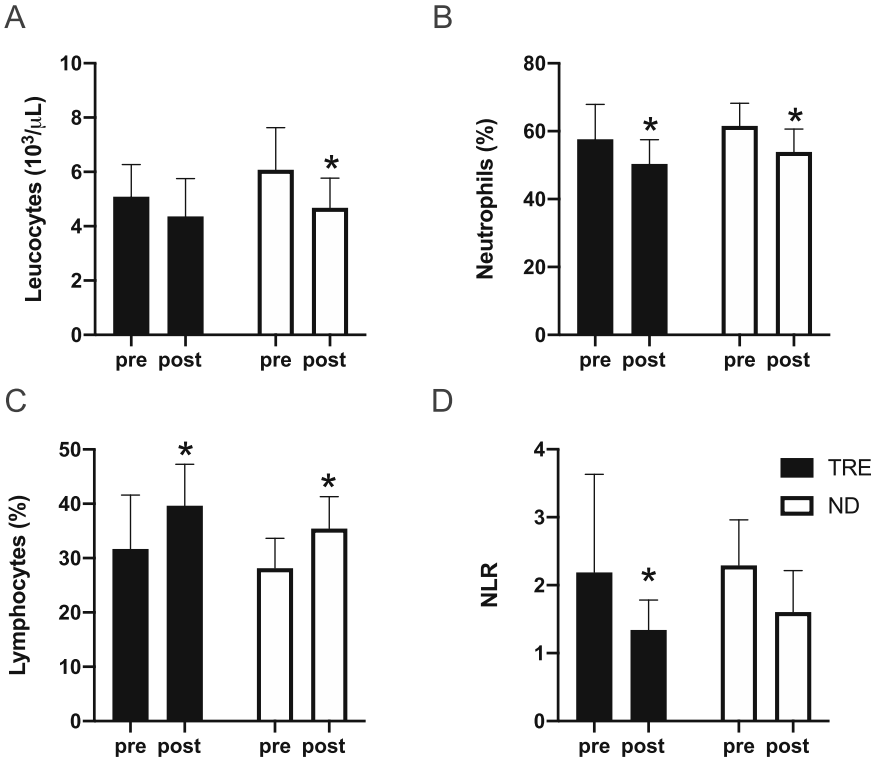
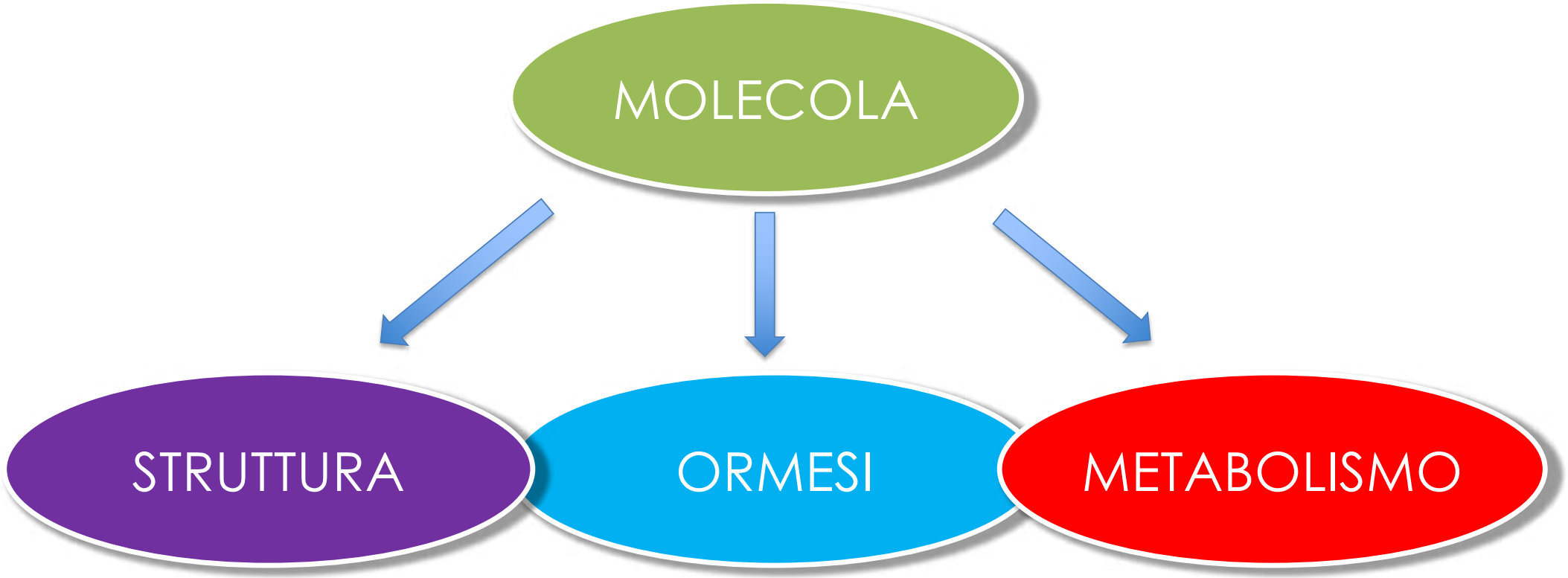
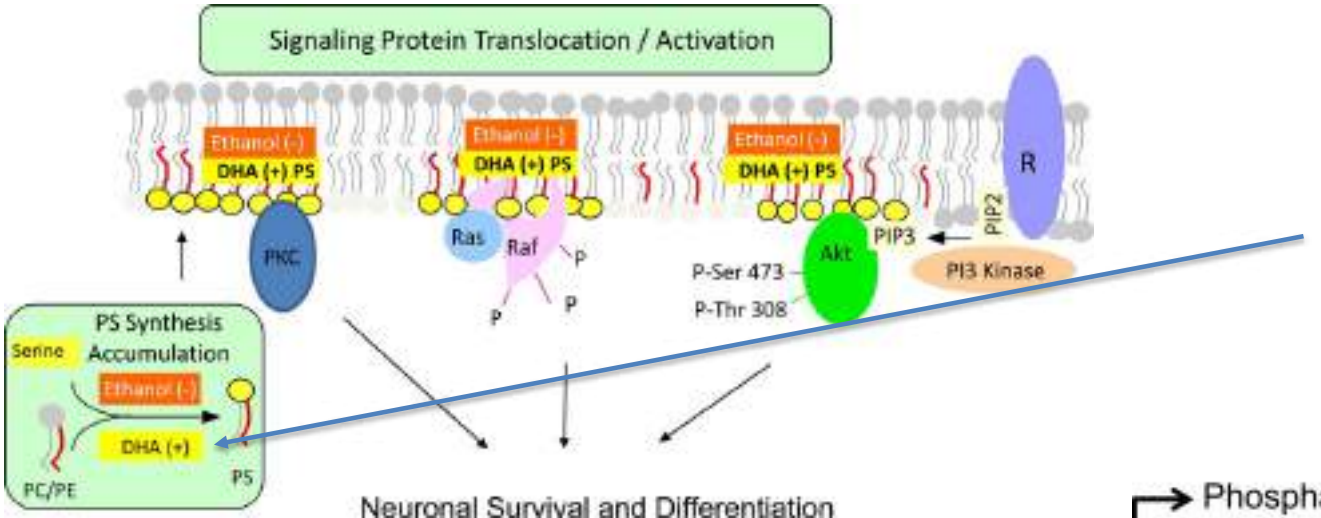


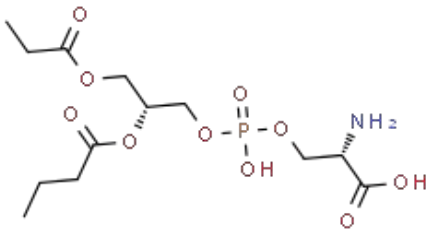
Fig. 3 White blood cells response to 4 weeks of treatment. **a** White Blood Cells; **b** Neutrophils; **c** Lymphocytes and **d** Neutrophils-to-Lymphocytes ratio (NTR). Data are mean ± SD * significantly different form pre values ($P < 0.05$). TRE, Time Restricted eating; ND, Normal Diet

NUTRACEUTICA, ESERCIZIO E IMMUNITÀ

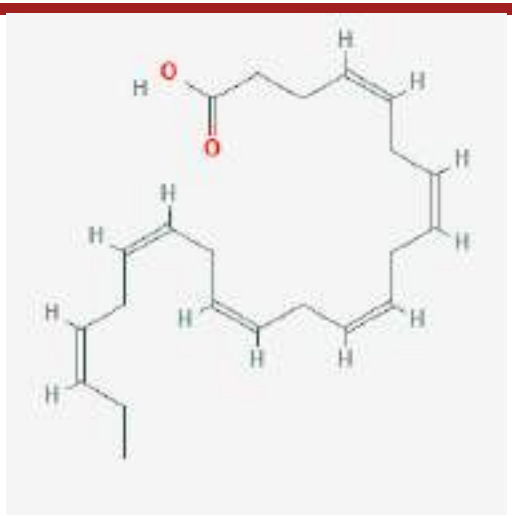


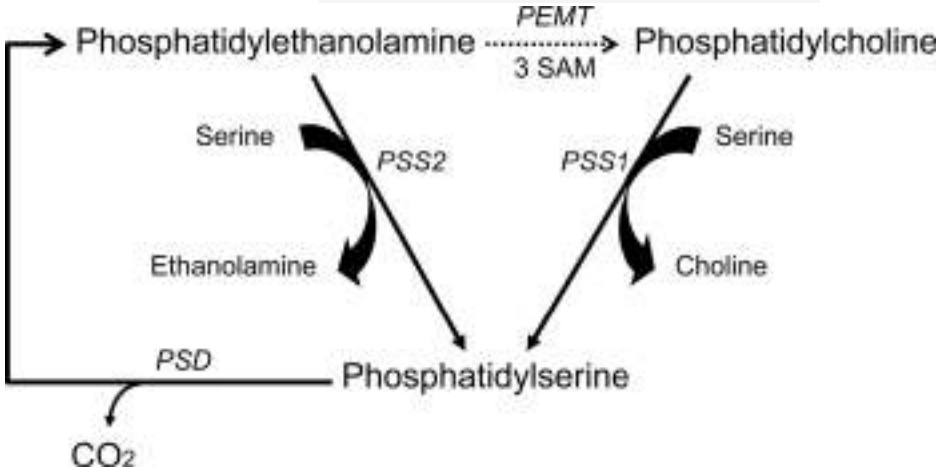
Nutraceutica, esercizio ed immunità





Phosphatidylserine (PS) is the major acidic phospholipid class that accounts for 13–15 % of the phospholipids in the human cerebral cortex



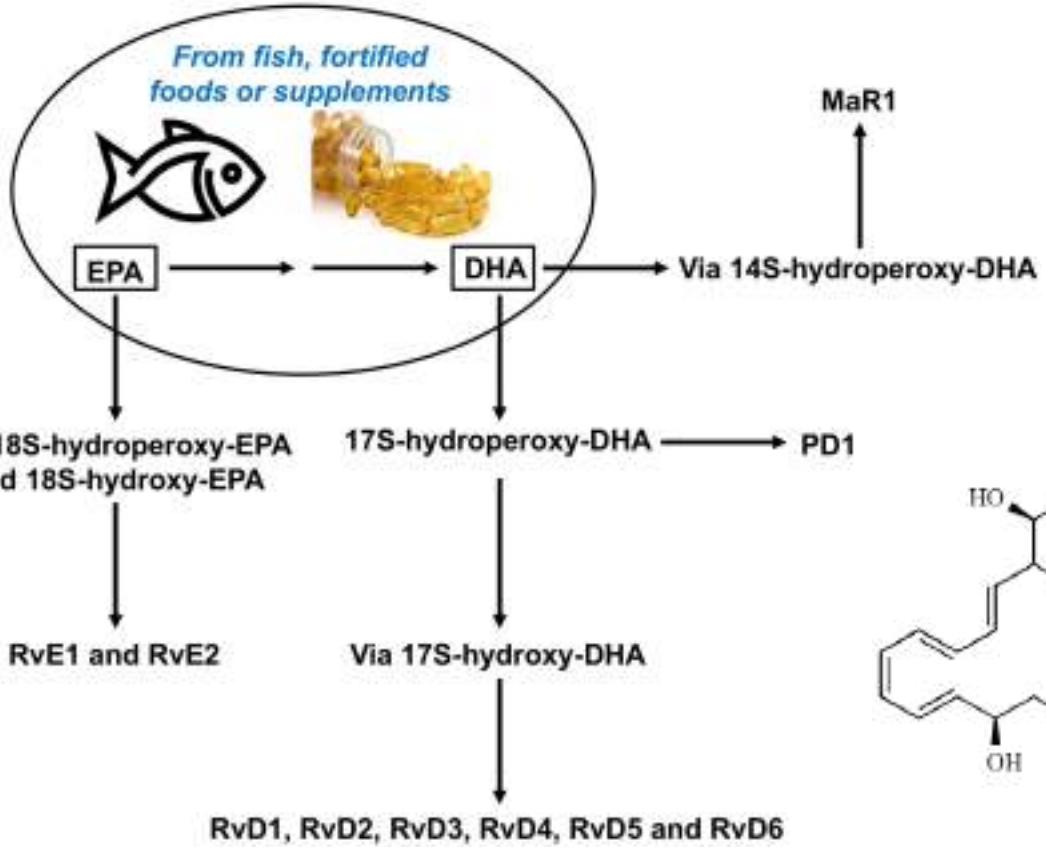


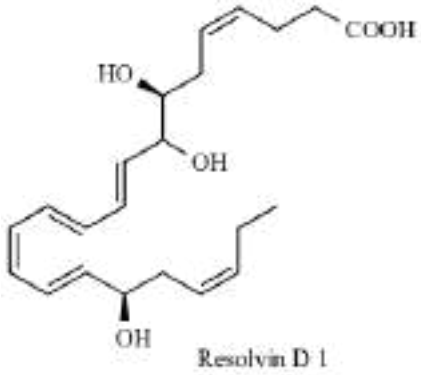
Kim et al. *Prog Lipid Res*. 2014 October ; 0: 1–18

Nutraceutica, esercizio ed immunità

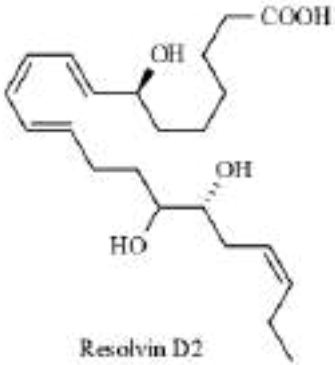
EPA DHA

3





Resolvin D 1



Resolvin D2

Barnig et al. Front Immunol. 2019 Jul 23;10:1699

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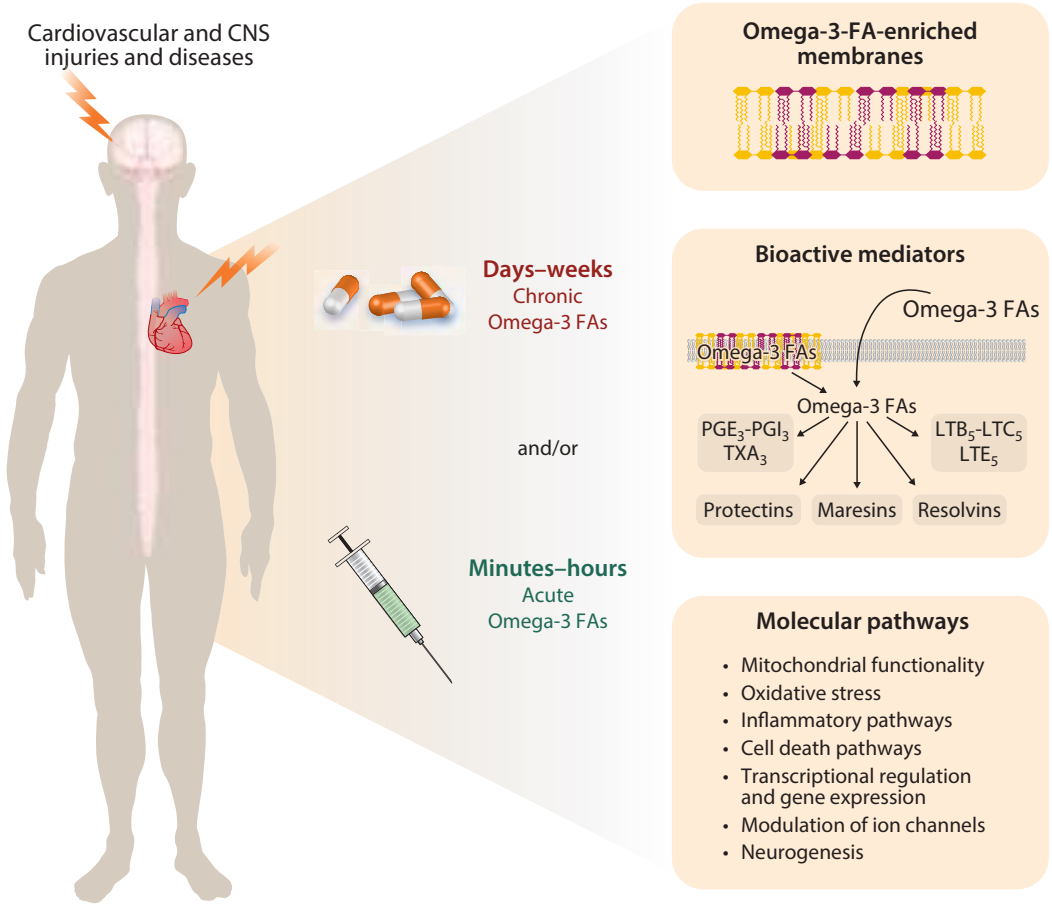
Nutraceutica, esercizio ed immunità



An imbalanced consumption of n-3/n-6 PUFAs may lead to gut microbial dysbiosis, in particular, a significant increase in the ratio of Firmicutes to Bacteroidetes, which eventually results in being overweight and obesity.

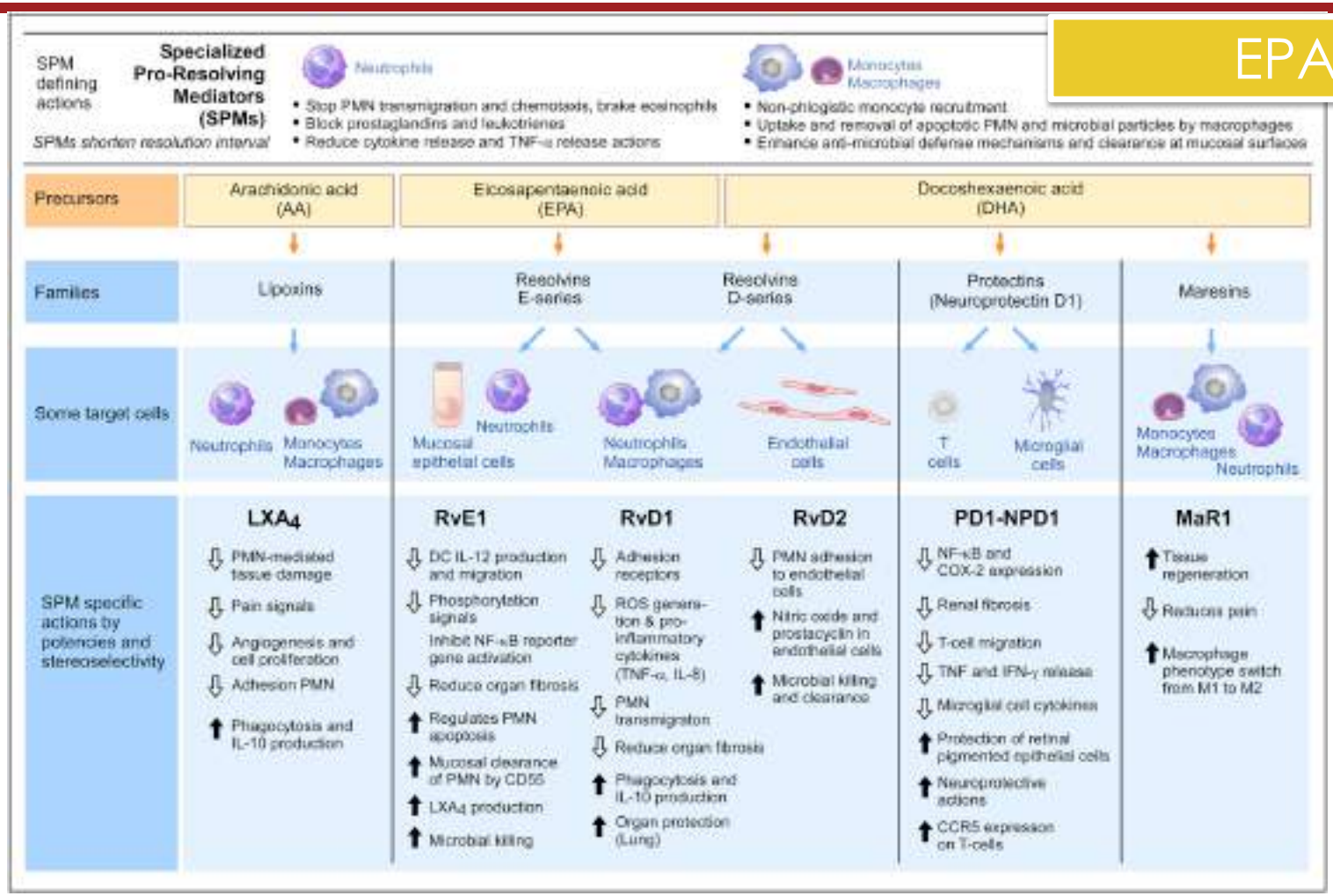
N-3 PUFA deficiency disrupts the microbiota community in metabolic disorders. In addition, accumulating evidence indicates that the interplay between n-3 PUFAs, gut microbiota, and immune reactions helps to maintain the integrity of the intestinal wall and interacts with host immune cells.

Supplementation with n-3 PUFAs may be an effective therapeutic measure to restore gut microbiota homeostasis and correct metabolic disturbances associated with modern chronic diseases.

Zirpoli et al. Annu Rev Nutr. 2020 Sep 23;40:161-187

Nutraceutica, esercizio ed immunità

EPA DHA



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