



## **FACT SHEET: Dairy's Impact on Athletic Performance**

In the past few years, we have seen multiple major league athletes go dairy-free to lengthen their professional careers—from Tom Brady to Kyrie Irving to 6 top players on the LA Dodgers. But how does dropping dairy lengthen an athlete's career? Here's what we know:

- One 8 ounce glass of cows' milk contains proteins and other foreign components, including sugars such as Neu5gc, that many people's bodies do not recognize, initiating an immune response, which results in inflammation.<sup>(1,2)</sup> Additionally, cows' milk is the main dietary source of the sugar molecule D-galactose which has been linked to inflammation and oxidative stress.<sup>(3,4)</sup> Chronic inflammation is associated with a host of diseases and health-related issues, but it is also the greatest inhibitor of recovery from intense training, which presents a huge problem for athletes.
- An athlete relies on quality blood flow and endothelial cell function to produce premium outputs, but dairy products contain loads of saturated fats and, even worse, trans fats, which can constrict blood vessels and slow blood flow to working muscles, ultimately inhibiting performance.<sup>(5, 6)</sup>
- Cows' milk and other dairy foods are low in antioxidants, which are necessary for combating exercise-induced free radicals.<sup>(7)</sup> If not eliminated, these inflammatory free radicals can cause lasting damage to our cells, prolonging recovery and increasing the risk of chronic diseases.<sup>(8)</sup> A whole food, plant-based diet, free of dairy products, has 64 times more antioxidant content than a diet of animal foods, allowing for improved blood oxygen flow and reducing inflammation.<sup>(7)</sup>
- A plant-based diet, free of dairy foods, is high in Omega 3 fatty acids, which help reduce inflammation and swelling, and low in Omega 6 fatty acids, which promote inflammation. When an athlete trains hard, they are breaking down tissue. While athletes do need Omega 6 to help repair their tissues, too much can lead to chronic inflammation. It is very important that an athlete's diet focuses on repairing their tissues and muscles with the least amount of added damage. A diet that relies on dairy and animal products can lead to a 20:1 Omega 6 to Omega 3 ratio, as opposed to a plant-based diet, which can lower the ratio to 2:1, which research suggests, is optimal for an athlete.<sup>(9)</sup>

- We are all born milk drinkers. As babies, our bodies produce the enzyme lactase, which breaks down lactose—a sugar in mammalian breast-milk—into the simpler sugars glucose and galactose. As we grow up and no longer have a need for breast milk, the production of lactase plummets for the majority of humans (up to 65% to the exact) leading to the development of lactose intolerance, the inability to properly digest the lactose sugar in cows' milk. Symptoms of lactose intolerance include bloating, stomach cramping, diarrhea, and constipation, which are all going to be a serious detriment to an athlete trying to reach the top step.<sup>(10)</sup>

## References:

1. Shek LP, Bardina L, Castro R, Sampson HA, Beyer K. Humoral and cellular responses to cow milk proteins in patients with milk-induced IgE-mediated and non-IgE-mediated disorders. *Allergy*. 2005 Jul;60(7):912-9.
2. Dhar C, Sasmal A, Varki A. From "Serum Sickness" to "Xenosialitis": Past, Present, and Future Significance of the Non-human Sialic Acid Neu5Gc. *Front Immunol*. 2019;10:807. doi:10.3389/fimmu.2019.00807
3. Michaëlsson K, Wolk A, Langenskiöld S, *et al*. Milk intake and risk of mortality and fractures in women and men: cohort studies. *BMJ*. 2014; 349:g6015. doi:10.1136/bmj.g6015
4. Batey LA, Welt CK, Rohr F, *et. al*. Skeletal health in adult patients with classic galactosemia. *Osteoporos Int*. 2013 Feb;24(2):501-9. doi:10.1007/s00198-012-1983-0.
5. Barnard ND, Goldman DM, Loomis JF, *et al*. Plant-Based Diets for Cardiovascular Safety and Performance in Endurance Sports. *Nutrients*. 2019;11(1):130. doi:10.3390/nu11010130
6. Brouwer IA, Wanders AJ, Katan MB. Effect of animal and industrial trans fatty acids on HDL and LDL cholesterol levels in humans--a quantitative review. *PLoS One*. 2010;5(3):e9434. doi:10.1371/journal.pone.0009434. [published correction appears in *PLoS One*. 2010;5(10) doi: 10.1371/annotation/c4cf3127-89b2-4d58-abf3-ab0746342a90].
7. Carlsen MH, Halvorsen BL, Holte K, *et al*. The total antioxidant content of more than 3100 foods, beverages, spices, herbs and supplements used worldwide. *Nutr J*. 2010;9:3. doi:10.1186/1475-2891-9-3
8. Gammone MA, Riccioni G, Parrinello G, D'Orazio N. Omega-3 Polyunsaturated Fatty Acids: Benefits and Endpoints in Sport. *Nutrients*. 2019; 11(1):46. <https://doi.org/10.3390/nu11010046>
9. Simopoulos AP. Omega-3 fatty acids and athletics. *Curr Sports Med Rep*. 2007 Jul;6(4):230-6.
10. NIH. [Lactose Intolerance Statistics](#). NIH website. Accessed February 2020.