

Sports Nutrition

Dr. Paul Lohmann®

High value mineral salts

www.lohmann-minerals.com

Faster – Higher – Better
Unlocking best Performance with Minerals in Sports Nutrition

Athletes, whether they're pushing through triathlons, soccer matches, or dance routines, constantly aim for peak performance and revel in the thrill of staying active. With more people at any ages embracing active lifestyles, the optimal physical performance to stay healthy and meet personal goals has never been more important.



Important Features of Key Minerals for Athletes

Mineral	Benefits in a nutshell	Health Claims*
Calcium	**Stay in motion** ♦ Strengthens bones ♦ Essential for muscle contraction ♦ Helps to reset	♦ Needed for the maintenance of normal bones ♦ Contributes to normal muscle function ♦ Contributes to normal neurotransmission
Iron	**Oxygen for energy** ♦ Vital for oxygen transport ♦ Boosts endurance, ♦ Combats sports anemia	♦ Contributes to normal energy-yielding metabolism ♦ Contributes to normal oxygen transport in the body ♦ Contributes to normal formation of red blood cells and haemoglobin
Magnesium	**The power up-Mineral** ♦ Energy booster ♦ Endurance ♦ Vital for muscle performance ♦ Reduces muscle soreness[1] ♦ Prevents muscle cramps ♦ Essential for hydration	♦ Contributes to normal energy-yielding metabolism ♦ Contributes to normal muscle function ♦ Contributes to a reduction of tiredness and fatigue ♦ Contributes to electrolyte balance
Potassium	**Nerve and muscles action** ♦ Resets nerve function ♦ Regulates blood pressure ♦ Needed for fluid balance ♦ Part of glycogen metabolism	♦ Contributes to normal functioning of the nervous system ♦ Contributes to normal muscle function ♦ Contributes to the maintenance of normal blood pressure
Sodium	**Prevention of dehydration** ♦ Essential for fluid control and electrolyte balance	
Zinc	**Quick Recovery** ♦ Promotes immune function ♦ Contributes to protein synthesis ♦ Aids in recovery from athletic activity	♦ Contributes to the normal function of the immune system ♦ Contributes to the protection of cells from oxidative stress ♦ Contributes to normal DNA synthesis ♦ Contributes to normal macronutrient metabolism

Electrolytes – Rehydrate faster and stay balanced

Hydration is an important aspect for all athletes. As perspiration increases during exercise, so does the need for water and Minerals, since sweat contains about 2-3 grams of Mineral Salts per liter which include the key minerals Sodium, Potassium, Magnesium, and Calcium. After lasting exercises with considerable sweat loss and mineral depletion, it is essential to replenish these lost Minerals and fluids.

Mineral-rich sports drinks or electrolyte supplements can effectively replenish lost Minerals and fluids, helping to maintain optimal hydration levels during training and competition. Hypotonic drinks are ideal for the best absorption of water[2]. Moreover, athletes should listen to their bodies and drink according to their thirst to meet their individual needs[3].

Prototype formulation – Electrolyte drink sachet

Ingredients	(%)
Magnesium Citrate	15.8
Ferrous Bisglycinate	0.3
Potassium Citrate	7.0
Calcium Lacatate PLUS	16.3
Sodium Citrate	44.1
Acidifier	11.5
Aroma	4.7
Sweetener	0.3

Contains Mg, Ca, Fe, 15 % NRV** of each | K 5.6% NRV** | 500 mg Na

Restore your Mineral balance:

Sweat contains 2-3 g/l Mineral Salts. It is essential to restore the loss during exercise.

Minerals for Endurance Activities – Sustain energy and reach higher

Endurance athletes aim to sustain peak power output over extended periods. Given the high energy demands of prolonged activity, their requirement for macro-and micronutrients is greatly increased. Carbohydrates act as the primary fuel source, while minerals are crucial for maintaining performance over long durations.

Sports nutrition products packed with carbohydrates, proteins, and essential Minerals like Magnesium, Calcium, and Zinc refuel athletes with energy they need and ensure proper function of the muscles. This combination helps athletes to perform at their best.

Prototype formulation– Cereal bar

Ingredients	(%)
Potassium Magnesium Citrate	2.31
Calcium Citrate Malate	2.18
Magnesium Citrate	1.15
Zinc Citrate	0.02
Oats	33.97
Butter	18.87
Honey	13.21
Cane sugar	9.43
Raisins, cranberries	9.43
Walnuts	9.43

Contains Mg, Zn, Ca, each 30 % NRV** | K 15 % NRV**

The powerful energy boost:

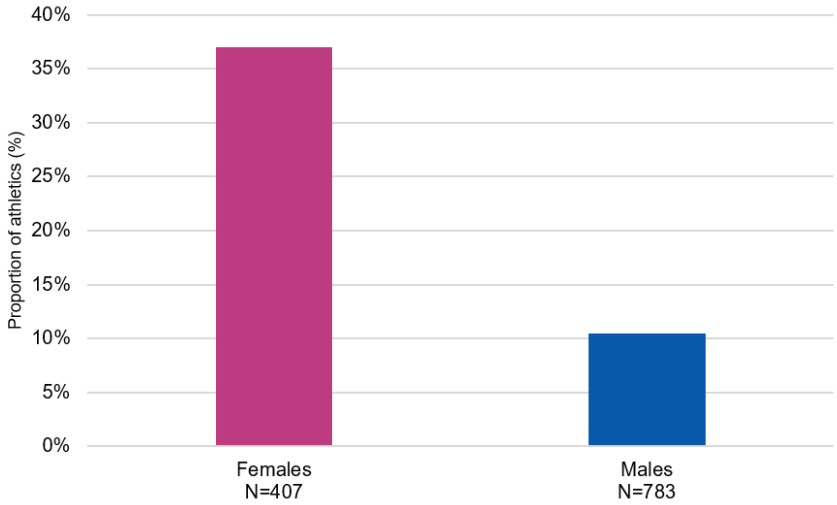
Minerals play an important role in enabling athletes to sustain performance over long durations.

Combat sports anemia – Go faster and feel better

Iron is an essential micronutrient that plays a critical role in several physiological functions including oxygen transport in the blood, energy production and DNA synthesis. Moreover, Iron is a functional component of the muscle protein myoglobin, an Iron dependent protein regulating the level of physical performance. Athletes may need up to 70 % more Iron than the recommended daily intake.

Iron deficiency is common in athletes, more than 30 % of female athletes and about 10 % of male athletes are Iron deficient[3,4]. This can be due to increased Iron demand or losses from sweating and gastrointestinal micro bleeding[3]. Iron deficiency can significantly hinder athletic performance by reducing oxygen transport. This concern affects athletes across all age groups, but it is particularly prevalent among females and young athletes.

Iron deficiency in athletes[4]



Prototype formulation – Iron Fast Melt Stick

Ingredients	(%)
Ferrous Fumarate, microencapsulated	3
Carrier	91
Acidifier	3
Anticaking agent	2
Flavour	< 1
Colorant	< 1
sweetener	< 1

Contains Fe 100 % NRV**

Iron is key for highest performance:

More than 30 % of female athletes and about 10 % of male athletes are iron deficient.

How to Choose the Best Mineral Salt

To reach peak athletic performance, athletes need the right balance of nutrition and hydration. Often, they risk falling short on essential micronutrients due to higher demand. Dietary supplements and mineral-enriched foods play a crucial role alongside daily diets, ensuring they receive all vital Minerals and trace elements.

Choosing the right Mineral Salt to support athletes' performance in a faster, higher, better way requires careful consideration of the anionic component. Beyond physical and chemical properties like solubility, pH, and taste, the choice of anions significantly impacts bioavailability and tolerability. Select Mineral Salts with organic anions for better absorption and enhanced athletic performance.

- ➔ Organic anions enhance the absorption of certain cations such as Magnesium, Iron and Calcium
- ➔ Citrate, Malate and Fumarate are part of the citric acid cycle, making them easy to digest
- ➔ Fully reacted Mineral Salts of Mineral Bisglycinate are known for their excellent bioavailability and tolerance, making them ideal for those with sensitive stomach

Our best performers for sports nutrition

Mineral Salt	Soluble	Insoluble
Calcium	Calcium Bisglycinate*** Calcium Lactate PLUS	Calcium Carbonate Calcium Citrate Calcium Citrate Malate
Magnesium	Magnesium Bisglycinate*** Magnesium Citrate Magnesium Citrate Malate*** Magnesium Gluconate Magnesium Lactate	Magnesium Carbonate Magnesium Malate*** Magnesium Phosphate
Iron	Ferrous Bisglycinate Ferrous Gluconate Ferrous Sulfate	Ferrous Fumarate Ferric Pyrophosphate
Zinc	Zinc Bisglycinate Zinc Ascorbate*** Zinc Gluconate Zinc Sulfate	Zinc Citrate Zinc Malate***
Potassium	Potassium Magnesium Citrate Potassium Citrate	-

*** Only permitted for food supplements in EU

We offer mineral salts for every type of delivery format, from liquid and viscous to powdered and solid. Plus, as your manufacturing experts for tailor-made Mineral Salts we can customize our products to suit your specific needs.

Unlock the full potential of your sports nutrition products with our comprehensive selection of Minerals. Our meticulously crafted Mineral Salts enhance the performance and effectiveness of your formulations, ensuring your products stand out in the market.

Our expert team is dedicated to assisting you in shaping the future of sports nutrition. Explore our prototype formulations, a testament to our commitment to your success. Partner with us to elevate your products and achieve outstanding results.

For detailed prototype formulation or more information about our minerals, contact us! We're here to assist with any inquiries.

References

[1] Tarsitano, M. G., Quinzi, F., Folino, K., Greco, F., Oranges, F. P., Cerulli, C., & Emerenziani, G. P. (2024). Effects of magnesium supplementation on muscle soreness in different type of physical activities: a systematic review. Journal of translational medicine, 22(1), 629. https://doi.org/10.1186/s12967-024-05434-x

[2] Rowlands, D. S., Kopetschny, B. H., & Badenhorst, C. E. (2022). The Hydrating Effects of Hypertonic, Isotonic and Hypotonic Sports Drinks and Waters on Central Hydration During Continuous Exercise: A Systematic Meta-Analysis and Perspective. Sports medicine (Auckland, N.Z.), 52(2), 349–375. https://doi.org/10.1007/s40279-021-01558-y

[3] Keller, K., Friedrich, O., Treiber, J., Quermann, A., & Friedmann-Bette, B. (2024). Iron deficiency in athletes: Prevalence and impact on VO2 peak. Nutrition (Burbank, Los Angeles County, Calif.), 126, 112516. https://doi.org/10.1016/j.nut.2024.112516

[4] Kardasis, W., Naquin, E. R., Garg, R., Arun, T., Gopianand, J. S., Karmakar, E., & Gnana-Prakasam, J. P. (2023). The IRONy in Athletic Performance. Nutrients, 15(23), 4945. https://doi.org/10.3390/nu15234945

* Commission Regulation (EU) No 432/2012 establishing a list of permitted health claims made on foods, other than those referring to the reduction of disease risk and to children's development and health

**Regulation (EC) No 1925/2006 of the European Parliament and of the Council on the addition of vitamins and minerals and of certain other substances to foods

*** Only permitted for food supplements in EU

Dr. Paul Lohmann®
Your Competent Partner for High Value Mineral Salts

With over 135 years of producing Mineral Salts that meet the highest quality standards, we have established ourselves as the leading global supplier to the pharmaceutical, biopharmaceutical, nutritional supplement, food and personal care industries.

Our Expertise

- GMP and DIN EN ISO 9001 certified production sites
- FSSC 22000/ISO 22000 certified
- Processes according to HACCP
- Compliance and commitment with the FSMA (food safety modernization act)
- Tailor-made and innovative solutions according to customer requirements
- Highly qualified experts in R&D lab and application technology with long-term experience and a wide variety of possibilities to develop new products and applications
- Joint product and application development together with our customers
- Our manufactured products are exclusively Made in Germany
- A wide range of more than 400 different Mineral Salts
- Products in compliance with the most relevant pharmacopoeias (Ph.Eur., USP, BP), food codices (FCC, E-numbers, etc.) and customer specific requirements
- Regulatory documentation (CEP, ASMF, etc.)
- REACH compliance on request
- Wide range of production equipment
- Social and environmental standards (DIN EN ISO 50001, EcoVadis, Sedex)
- High purities can be realized according to specific requirements

Modification

- Physical properties
- Chemical properties
- Packaging
- Labeling

The information given in the document corresponds to our current knowledge. We warrant in the frame of our General Terms and Conditions of Sale that our products are manufactured in accordance with the specifications. However, we disclaim any liability with regard to the suitability of our products for a particular purpose or application or their compatibility with other substances. Tests have to be performed by the customer who also bears the risk in this respect. Nothing herein shall be construed as a recommendation to use our products in conflict with third parties' rights.

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