

## THE INTAKE OF MAGNESIUM AS A PREVENTION OF THE CLINICAL CONDITIONS OF MAGNESIUM DEFICIENCY (FATIGUE; WEAKNESS AND EXHAUSTION)

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### Abstract

The main goal of the research was to make adequate planning of sports nutrition in terms of manner, type and amount of intake of magnesium-rich nutrients in order to prevent and treat the conditions of magnesium deficiency (exhaustion, fatigue, weakness) among athletes. At the sports medical ambulance in Struga, in 2018 a total of 53 patients from 2025 examined athletes were diagnosed with fatigue, exhaustion and weakness, after several additional diagnostic tests (laboratory-electrolyte status, neurological examination, ECG) and have been reported as conditions of changes exclusively in the mineral-electrolytic hydration status- hypomagnesaemia. Based on the current scientific knowledge, athletes (patients) were treated nutritionally for 4 weeks. The athletes continued physical activity with the same planned training process in terms of intensity and duration but in cases where there was an expressed clinical symptomatology (prolonged weakness and exhaustion), our suggested level of physical activity decreased to the lowest possible level. In the end, after 4 weeks of planned sports nutrition, all athletes achieved good results from nutritional therapy.

*Keywords:* Hypomagnesaemia. Fatigue. Weakness. exhaustion.

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### Introduction

Athletes need sufficient magnesium which is important for sports performance, but also health status (Bean, 2006). Advanced Sports Nutrition helped thousands of athletes apply the most effective and cutting-edge strategies for optimal fueling and performance (Benardot, 2011). The main goal of the research was to make adequate planning of sports nutrition in terms of manner, type and amount of intake of magnesium-rich nutrients in order to prevent and treat the conditions of magnesium deficiency (exhaustion, fatigue, weakness) among athletes (Bojcheski, O., Kica, H., Bojcheska, M., 2014). Magnesium is an essential mineral for the human body (production of energy for performing physical activity, maintains the function of the muscle and nerve system, supporting the immune process, proper heart rhythm). The required daily magnesium dose is 300 milligrams. The sports organism due to the increased physical activity has increased magnesium need of 400 mg daily. Williams H. Melvin (2016) is actively involved in the disciplines of exercise physiology and sports nutrition.

## Materials and Methods

At the sports medical clinic in Struga, in 2018 a total of 53 patients from 2025 examined athletes were diagnosed with fatigue, exhaustion and weakness, after several additional diagnostic tests (laboratory-electrolyte status, neurological examination, ECG) and have been reported as conditions of changes exclusively in the mineral-electrolytic hydration status-hypomagnesaemia. Based on the current scientific knowledge, athletes (patients) were treated nutritionally for 4 weeks.

No	Products that have highest magnesium value (in 100 grams)	Magnesium in milligrams
1	flaxseed	392
2	sesame	351
3	Pumpkin seeds	340
4	sunflower	325
5	currants	268
6	rosehip	240
7	black/dark chocolate	228
8	lemon	176
9	dried plums	163
10	chestnuts	158
11	oatmeal	138
12	pistachios	120
13	mackerel fish	98
14	eggs	90
15	spinach	87
16	Swiss chard	86
17	soybean	86
18	chocolate	73
19	plums	68
20	beans	68

## MENU 1

### BREAKFAST

- Tea of rosehip (250 ml)
- Integral bread with sunflower seed, flaxseed (100 gr)  
Plums marmalade

### LUNCH

- Strained lemon (250 ml)
- Salad (lettuce apple acid, flaxseed) (250 gr)
- Roast or fried mackerel fish (300 gr)

### DINNER

- Strained lemon (250 ml)
- Boiled broccoli and cauliflower (300 gr)
- All kind of nuts (100 gr)

## MENU 2

- BREAKFAST
- Strained apple and orange (250 ml)
- 2 boiled eggs
- Integral bread (100 gr)
- All kind of nuts (100 gr)

### LUNCH

- Pie of stew spinach
- Integral bread with seeds (100 gr)
- Dark chocolate (25 gr.)

### DINNER

- Soybean
- Fruit salad (all kind of fruits)
- Pumpkin seeds

## MENU 3

### BREAKFAST

- 2 pressed bananas
- Sesame (1 small spoon)
- Flax seed (1 small spoon)
- Chia seed (1 small spoon)
- Meal (pistachios)

### LUNCH

- Pie of stew Swiss chard
- Integral bread with seeds (100 gr)
- Meal plums

### DINNER

- Boiled pea, green bean
- Oatmeal (100 gr)

## MENU 4

### BREAKFAST

- Boiled pumpkin (300 gr.) with honey
- All kind of nuts

### LUNCH

- Roast of fried mackerel fish (300 gr)
- Integral bread with seeds (100 gr)
- Dark chocolate

#### DINNER

- Boiled pea, green bean
- Chestnuts (100 gr)
- Strained lemon (250 ml)

#### MENU 5

#### BREAKFAST

- Fruit salad (all kind of fruit)
- Cup of cacao

#### LUNCH

- Boiled veal with beans (300 gr)
- Integral bread with seed (100 gr)
- Pistachios

#### DINNER

- 2 eggs
- chestnuts (100 gr)
- Strained lemon (250 ml)

#### Conclusion

The athletes continued physical activity with the same planned training process in terms of intensity and duration but in cases where there was an expressed clinical symptomatology (prolonged weakness and exhaustion), our suggested level of physical activity decreased to the lowest possible level. In the end, after 4 weeks of planned sports nutrition, all athletes achieved good results from nutritional therapy.

#### References

- [1]. Bean Anita. (2006). *Sports nutrition. 5th edition*. London: Bloomsbury Publishing PLC.
- [2]. Dan Benardot. (2011). *Advanced Sports Nutrition Paperback. 2nd edition*. Windsor: Human Kinetics.
- [3]. Oliver Bojceski, Hynor Kica, Marina Bojceska. (2014). *Nutrition in sports – manual for athletes and coaches*.
- [4]. Williams H. Melvin. (2016). *Nutrition for health, fitness and sport. 11 edition*. New York: McGraw-Hill.