

## Sažetak

Pandemija SARS-COV2 virusom koja je krajem 2019 godine zahvatila svet do sada je odnela preko 5700000 ljudskih žrtava, uz preko 400 miliona zaraženih. Osim zdravih, osoba sa komorbiditetom i hroničnim bolestima zaražavanju od ove infekcije podložni su i sportisti iako se za njih smatra da su u punoj snazi. To su nam pokazala poslednje takmičenja poput zimskih olimpijskih igara, evropskog rukometnog prvenstva, evrolige u košarci ili teniskih turnira. Osim standardne suplementacije koja se u preventivne svrhe predlaže zdravim osobama a koja podrazumeva vitamin D, vitamin C, magnezijum i cink sportistima od pomoći u prevenciji infekcije mogu da budu i drugi vitamini i minerali. Intezivno vežbanje i napor predstavlja jednu vrstu metaboličkog i oksidativnog stresa koji favorizuje proinflamatorne procese pa to čini sportiste podložnijim infekciji. Inflamacija koja se razvija u toku intezivnog vežbanja dovodi do poremećaja homeostaze cinka. Sa jedne strane dolazi do njegovog većeg gubitka, putem znoja recimo a sa druge strane do njegove tkivne redistribucije. Usled treninga i napora dolazi do poremećaja funkcije membranskih transportera cinka pa on više ulazi u ćelije a iz njih teško izlazi. Nagomilan u ćelijama transportuje se u ćelijske organele gde zbog disfunkcije transportera za efluks biva na neki način zarobljen. Tako je opšta količina cinka potrebna organizmu za zaštitu od virusne infekcije relativno smanjena. Zbog toga se smatra da je svakodnevna suplementacija cinkom u dozi od 10 mg neophodna svim sportistima koji intezivno vežbaju. Posebnu pažnju treba posvetiti sportistima koji se hrane samo biljnom hranom jer fitična kiselina koja se iz nje stvara dodatno smanjuje resorpciju cinka. Uz vitamin D (1000-2000 ij/dan) i C (1000-2000 mg/dan) ovo bi morala biti standardna suplementacija sportista u vreme pandemije Kovid-19. Doza magnezijuma zbog povećanih potreba mišićnih ćelija kod sportista mora biti dvostruko veća od doze kod odrasle zdrave populacije (2x375 mg/dan). N-acetilcistein, već duže vremena poznat i kao antiinflamatorni i antioksidantni agens (nalazi se u protokolima za Kovid-19) neophodan je za regulaciju citoprotektivnih adaptogenih faktora u mišićnim ćelijama u toku vežbanja. Osim toga on reguliše preuzimanje glukoze i insulinsku osetljivost, funkciju enzima i tako skraćivanje mišića u toku vežbanja i umor. Zato je potrebno savetovati suplementaciju naročito rekreativcima posle 40. godine života (300 mg/dan), a onima starijima suplementaciju duplim dozama NAC (600 mg/dan). I na kraju sportistima su u prevenciji dodatno potrebne i omega-3 masne kiseline. One mogu da pomognu nu oporavku od umora, popravljaju performance mišića i smanjuju rizik od bolesti i povreda.

## Summary

The SARS-COV2 pandemic virus that hit the world at the end of 2019 has so far claimed over 5,700,000 lives, along with over 400 million infected. In addition to healthy people, people with comorbidities and chronic diseases, athletes are also susceptible to infection from this infection, although they are considered to be in full force. This has been shown to us by the latest competitions such as the Winter Olympic Games, the European Handball Championship, the Euroleague in basketball or tennis tournaments. In addition to the standard supplementation that is proposed for healthy people for preventive purposes, and which includes vitamin D, vitamin C, magnesium and zinc, other vitamins and minerals can be of help in preventing infection in athletes. Intensive exercise and effort is a type of metabolic and oxidative stress that favors proinflammatory processes, which makes athletes more susceptible to infection. Inflammation that develops during intense exercise leads to disorders of zinc homeostasis. On the one hand, there is a greater loss of it, through sweat, for example, and on the other hand, there is its redistribution. Due to training and effort, the function of membrane transporters for zinc is disturbed, so it enters the cells more and it is difficult to get out of them. Accumulated in the cells, it is transported to the cell organelles, where it is trapped in some way due to the dysfunction of the efflux transporter. Thus, the total amount of zinc needed by the body to protect against viral infection is relatively reduced. Therefore, it is considered that daily zinc supplementation in a dose of 10 mg is necessary for all athletes who exercise intensively. Special attention should be paid to athletes who eat only plant foods, because the phytic acid that is created from it further reduces the resorption of zinc. With vitamin D (1000-2000 IU/day) and C (1000-2000 mg/day), this should be the standard supplementation of athletes during the Kovid-19 pandemic. The dose of magnesium due to the increased needs of muscle cells in athletes must be twice as high as the dose in the healthy adult population (2x375 mg / day). N-acetylcysteine, long known as an anti-inflammatory and antioxidant agent (found in the Kovid-19 protocols), is necessary for the regulation of cytoprotective adaptogenic factors in muscle cells during exercise. In addition, it regulates glucose uptake and insulin sensitivity, enzyme function and thus muscle contraction during exercise and fatigue. Therefore, it is necessary to advise supplementation, especially to recreational people after the age of 40 (300 mg/day), and to those who are older, supplementation with double doses of NAC (600 mg/day). And at the end for athletes, omega-3 fatty acids are additionally needed for prevention. They can help recover from fatigue, improve muscle performance and reduce the risk of disease and injury.