

Gayatri N Virpara

**CHARACTERISTICS OF MUSCLE FATIGUE MEASUREMENTS
AND THE INFLUENCE OF COVID-19**

***Tutors: PhD in biol. sc. Morozova M.I.,
DM, associate professor Mikulyak N.I.***

*Department of Human Physiology
Penza State University, Penza*

The muscular system is the biological system of humans that produces movement. Skeletal muscle is one of three major muscle types, the others being cardiac muscle and smooth muscle. It is a form of striated muscle tissue which is under the voluntary control of the somatic nervous system.

When you experience fatigue, the force behind the muscles movements decrease, causing you to feel weaker, often this weakness is the initial sign. Other symptoms associated with muscle fatigue include: soreness; localized pain; shortness of breath; muscle twitching; trembling; a weak grip; muscle cramps.

The COVID-19 pandemic has affected many people in general and athletes in particular. This has led to a series of restrictions, which from a pathophysiological point of view, may affect the athlete's performance in the short and long term. The restrictions basically affect training and eating habits, disturbing physical condition, as well as psychological behavior and general health status. Several aspects of systemic alterations caused by the SARS-CoV-2 virus and the resultant COVID-19 disease have been currently explored in the general population. The researchers suggest that the most important element to take into account is the neuromuscular aspect, due to the implications that this system entails in motion execution and coordination. In this context, deficient neuromuscular control when performing dynamic actions can be an important risk factor for injury. COVID-19 causes metabolic-respiratory, muscular, cardiac, and neurological alterations that are accompanied by a situation of stress. All of these have a clear influence on performance but at the same time in the strategy of returning to optimal conditions to train and compete again after infection. From the clinical evidence, the resumption of physical training and sports activity should be carried out progressively, both in terms of time and intensity.

Muscle fatigue is a common complaint in clinical practice. In humans, muscle fatigue can be defined as exercise-induced decrease in the ability to produce force. Fatigue is a common non-specific symptom experienced by many people and is associated with many health conditions. Fatigue accumulation, if not resolved, leads to overwork, chronic fatigue syndrome (CFS), overtraining syndrome, and even endocrine disorders, immunity dysfunction, organic diseases and a threat to human health.

Muscle fatigue is defined as a decrease in maximal force or power production in response to contractile activity. It can originate at different levels of the motor pathway and is usually divided into central and peripheral components. Peripheral fatigue is produced by changes at or distal to the neuromuscular junction. Central fatigue originates at the central nervous system (CNS), which decreases the neural drive to the muscle. Muscle fatigue is a commonly experienced phenomenon that limits athletic performance and other strenuous or prolonged activity. It is also increases and restricts daily life under various pathological conditions, including neurological, muscular and cardiovascular disorders, as well as aging and frailty. This review primarily focuses on muscle fatigue, particularly during intense exercise, to provide a basic understanding and potential therapies for muscle fatigue.