

## THE NUTRITION OF ROCK CLIMBERS

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### SUMMARY

The aim of this work was to recommend the efficient model of the rock climbers' nutrition that will meet all the energy demands during one active climbing day. Like all the athletes, rock climbers should follow a good diet and sound nutritional practices in order to cultivate a top climbing performance. In order to succeed in this there is a need for an adequate dieting pre-, during and after climbing. In this respect, it is necessary to determine for each meal, liquids, carbohydrates, proteins and other macro and micro nutrients, and the time of their intake.

**Key Words:** nutrition, sport climbing

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### INTRODUCTION

Sports climbing today is a complex sport, complete with its own vocabulary and equipment that have come out of decades of experimentation. It has, for many years, been one of the fastest growing leisure activities, involving millions of people worldwide (Creasy & al., 1999).

Many words can describe the wonderful activity of rock climbing – elegant, powerful, rewarding, and, sometimes, frustrating. While there may be nothing more natural and intuitive than climbing (just watch how children climb around on everything in sight!), rock climbing is indeed a complex activity with demands unique and different from those of living and playing in the everyday, horizontal world. Performing in the vertical plane requires physical capabilities such as strength, power, and endurance. (Horst, 2003). A good strength and conditioning program can help improve these aspects, but the body needs the correct fuel to help the body perform these activities.

According to the sports classification, sports climbing belongs to a group of combined (complex) sports (Stanković, 2009; Stanković & al., 2011). They are characterized by high variety of movements in the conditions of compensated fatigue and changing

intensity of work (Verhosanski, & al., 1992). The immanent characteristic of these sports is a changeable competition situation and a need to preserve a high level of working capacity in the compensated fatigue conditions. Acyclic and cyclic types of sports include features of organization of movement activities and energy provision. Having in mind the changing intensity of the competitions' activity, the alteration of high movement activities and total rest, the energy work of muscles has an aerobic-anaerobic feature and the specific weight of glycolytic reaction (Verhosanski & al., 1992).

The aim of this work is to recommend the efficient model of the rock climbers nutrition that will meet all the energy demands during one active climbing day.

### METHOD

It's impossible to say exactly how big a part diet plays in climbing performance, but it is estimated that average climbers can realize a 10 to 20 percent improvement in their training, recovery, concentration, energy, and overall climbing performance if they dedicate themselves to an improved dietary surveillance (Horst, 2003).

Like all athletes, rock climbers should follow a good diet and sound nutritional practices in order to

cultivate top climbing performance. Proper rock climbing nutrition starts with eating a balanced and activity-appropriate diet based on the healthy nutritional principles. Intelligent pre-, during, and post-training/climbing meals come next (Rainey, 2009).

In sports climbing, the interval activities of high and low intensity call for the intake of energy substances that will be processed by means of the aerobic and anaerobic metabolic reactions. The anaerobic metabolic processes rely on the existing depots of ATP, phosphocreatine (PCr) and muscle glycogen, whereas the aerobic process derives energy from the muscle glycogen, glucoses in blood, fat and, to a lesser extent, proteins. During climbing body is mainly relying on muscle glycogen for the production of the majority of energy, using secondary fat and glucoses from the blood circulation as the source of the needed energy. The depots of fat almost never deplete. However, the energy generated by glucoses in blood is scarce, which forces an athlete to be on alert as far as the provision of a continuous source of glucoses during one climbing day is concerned.

Relying on muscle glycogen and glucoses from blood, to provide for the energy needs of the active muscles, means that a greater quantity of the carbohydrates prior to the onset of the physical activities is to be consumed, and the carbohydrate rich drinks in the course of the physical activity. (Benardot, 2010). These studies claim that the sporting excellence in performances was accomplished by means of an increased intake of carbohydrates (65% of the total calories) in contrast to the performances realized by a moderate intake of carbohydrates (39% of the total calories), and these are larger in the interval activities (Bangsbo, 2000). Also, a combination of the intake of water and carbohydrates induces improvements in the performances by 12% when compared to the intake of the electrolytes and by 5-6% in the case of the sole intake of just water, or just carbohydrates (Below & al., 1995). These findings validate the claim that carbohydrates enhance the absorption of liquids,

and that the decreased reserves of the carbohydrates ask for the intake of additional carbohydrates during physical activities. The increased need for the carbohydrates during physical activities of the high intensity asks for the continuous intake of additional carbohydrates. This claim is corroborated by the study showing that the performances during exercises are significantly improved if the intake of carbohydrates is continuous (Murray, & al., 1991). Also, it was determined that the optimal level of concentration of carbohydrates is 6-7% , in the drinks that are taken during physical activity. This concentration is the most optimal for the absorption of liquids, and also helps out carbohydrates to be efficiently transported to the active muscles. (Gisolfi & al., 1992).

The climbers may feel some pressure to achieve the high power-weight ratio useful in climbing, some may try to minimize their food intake in order to reduce body weight. However, the loss of body weight does not necessarily improve power-weight ratio. Climbers should focus on the loss of body fat while maintaining as much muscle mass as possible. An inadequate dietary intake can cause the loss of muscle mass which causes power to decrease. Consequently, the power-weight ratio ends up unchanged or lower despite a lower body weight. Consuming a diet too low in energy can also place climbers at risk of inadequate intakes of nutrients such as carbohydrate, protein, calcium and iron. It can also cause fatigue and a weakened immune system. Smart climbers avoid severe dieting and instead find the weight and body fat level that allows them to perform optimally while maintaining good health (Certified HyperStrike Trainers, 2005).

Here are some recommendations for sports climbing nutrition pre-, during and post climbing.

The purpose of pre-climbing meal is to provide fluid and energy to the climber during the activity. Pre nutrition will start around 3 hours before climbing. The pre-climbing meal should consist of a mix of very low glycemic carbohydrates. A good source of protein is also added to this meal. This will supply the body with the fuel to get through the

session. Water is also very important and the studies indicate 0.5 liter of water should be taken 2 hours before the activity. It is necessary to maximize the carbohydrate storagess by eating something about 30 minutes before the session. It is also recommended to drink another 0.5 liter of water.

During rock climbing, the main thing to consume is an adequate fluid. The purpose of this is to keep the body hydrated and at peak performance. For longer climbs and training sessions, it's important to refuel regularly with carbs during the activity in order to extend endurance and prevent fatigue. As climbing is focused on the muscular strength, power and endurance, it is recommended to have a branched chain of amino acids during climbing sessions and adding these to a carb/electrolyte drink.

As soon as the session has finished, it is recommended to take a mix of carbohydrates and proteins. A mix of whey protein and glucose will help replenish the depleted carbohydrate storages. This should be done in the first 30 minutes after finishing the session. Water is also needed to help re-hydrate the body. 1-2 hours after completing a climb, a substantial meal can be consumed, which can consist of carbohydrates, protein and fat.

## CONCLUSION

Like all athletes, rock climbers should follow a good diet and sound nutritional practices in order to cultivate top climbing performance. In order to succeed in this there is a need for an adequate dieting pre-, during and after climbing. In this respect, it is necessary to determine for each meal, liquids, carbohydrates, proteins and other macro and micro nutrients, and the time of their intake.

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## ISHRANA SPORTSKIH PENJAČA

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### SAŽETAK

Cilj ovog rada bio je da se preporuči efikasan model ishrane sportskih penjača, koji će zadovoljiti sve energetske potrebe za vreme jednog aktivnog penjačkog dana. Kao i svi sportisti, sportski penjači bi trebalo da prate dobar program ishrane kako bi postigli vrhunsku penjačku formu. Da bi u tome uspeli neophodan je pravilan režim ishrane pre, za vreme i posle penjanja. U tom smislu, neophodno je za svaki obrok odrediti količinu unete tečnosti, ugljenih hidrata, proteina i drugih makro i mikronutritijenata, kao i vreme njihovog konzumiranja.

**Ključne reči:** ishrana, sportsko penjanje

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