1-A-8 Effect of BCAA supplement timing on the attenuation of DOMS

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Purpose: The purpose of this study was to determine the influence of BCAA supplement timing on the attenuation of DOMS.

Methods: Fifteen healthy and sedentary young men (21.5 ± 1.5 yr) were assigned to three groups (placebo supplement group, CONT; before supplement group, BEFORE; after supplement group, AFTER) in a random and double-blind manner. BEFORE group ingested BCAA before the 3 days (3.2 g × 3 times / day) and 15 min (9.6 g) exercise day. On the exercise day, Subjects performed six sets of five repetitions eccentric exercise of elbow flexor. Thereafter, AFTER group ingested BCAA immediately after (9.6 g) and 3days (3.2 g × 3 times / day) after the exercise day. CONT group ingested placebo through the experiment periods.

Results: Increasing muscle damage marker (serum CK) and decreasing elbow range of motion were tend to attenuated in BEFORE group compared to CONT group, but not significantly. At 1 and 2 day after the exercise, increasing upper arm circumference was significantly attenuated in BEFORE group compared to CONT group. Increasing DOMS at 4 day after the exercise was significantly attenuated in BEFORE group compared to CONT group.

Conclusion: These results suggested that BCAA supplement before the exercise is more effective for attenuation of DOMS after eccentric exercise.

Key Words: BCAA, DOMS, supplement timing, eccentric exercise

1-A-10 Viscoelastic change of the triceps surae muscle with heel raising exercise

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Purpose: A close relationship between ultrasound velocity and muscle viscoelasticity was recently reported. It is known that ultrasound velocity depends on the viscoelasticity, fiber orientation and tissue water content of the muscle. The purpose of this study was to clarify the difference of muscle viscoelasticity by measuring ultrasound velocity in each part of the triceps surae muscle caused by strenuous exercise.

Methods: The subjects were 17 male university students. Ultrasound velocity was measured by an ultrasonograph (FAZONE-M, Fujifilm), and muscle thickness and calf circumference were also measured. The subjects were asked to perform a heel raising exercise at 30 times per minute for 5 minutes. After the ultrasound velocity at bony attachment (BA), belly of muscle (BM), musculotendinous junction (MJ) of the triceps surae, and soleus muscle (SM) and gastrocnemius muscle (GM) was measured at 5-minute interval for 30 minutes.

Results: The ultrasound velocity of BA, BM, and MJ of the triceps surae, and SM and GM significantly decreased immediately after the exercise, then gradually increased. However, a remarkable difference in ultrasound velocity was not observed at any site.

Discussion: It is suggested that ultrasound velocity decreased after strenuous local exercise due to storage of tissue water in the lower leg. Therefore, the physiological behavior after exercise in various muscle groups can be evaluated using an ultrasonograph.

Key Words: ultrasound velocity, heel raising exercise, muscle viscoelasticity, triceps surae muscle