

The Effect of Bovine Colostrum and Creatine Monohydrate Supplementation on Performance Characteristics in Male Athletes.

Fabrizio Gargiulo and Dr Justin Roberts

University of Hertfordshire, School of Life Science, Hatfield, AL10 9AB

Introduction:

Bovine colostrum (BC) is the initial milk secreted by cows post-parturition. Bovine colostrum has been shown to contain greater concentrations of immunoglobulins, growth factors and anti microbial proteins, which could aid in gastrointestinal function and absorption of nutrients.

There has been some evidence to demonstrate that BC supplementation has demonstrated positive improvements in sporting performance, notably in increasing lean muscle mass, vertical jump height and recovery from maximal sprints (Hofman et al. 2002). Bovine colostrum has also been linked with improved strength, however conflicting research has not concluded if the improvements in strength are as a result of increased gastrointestinal function or raised plasma – IgF levels. There is also limited evidence on combining BC with creatine monohydrate and examining its effects on strength performance (Kerksick et al. 2007).

The purpose of the study was to examine the effects of 20g/day bovine colostrum supplementation combined with 5g/day creatine monohydrate on performance characteristics – body fat percentage (Bf%), fat free mass (FFM), 1 repetition maximum (1RM) bench press, vertical jump, 40 yard sprint and 20 yard agility shuttle.

Method: Nineteen healthy male individuals from the University of Hertfordshire American football team volunteered as subjects; mean \pm SD, age 21 ± 1.45 years, mass 86.7 ± 12.6 kg, and height 179.9 ± 4.8 cm. Subjects completed a 6-week progressive training program designed to improve speed, and strength. In a double blind randomised manner, subjects were assigned either; bovine colostrum 20g/d (BC), bovine colostrum 20g/d and creatine monohydrate (Cr) 5g/d (BC/Cr) or placebo (skimmed milk powder) 20g/d (P) as a supplementation method for the duration of the study. Subjects reported for testing on 3 occasions; weeks 0, 4 and 6. On each occasion subjects were tested for; mass (kg), Bf%, FFM (kg), 40yd sprint time (secs), 20yd agility shuttle time (secs), vertical jump height (cm) and 1 RM bench press (kg) at each of the testing venues respectively.

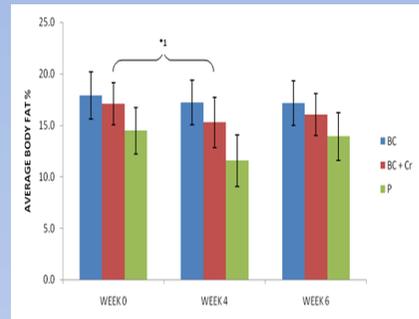


Figure 1 - Average body fat percentage within groups across the 6 week intervention period

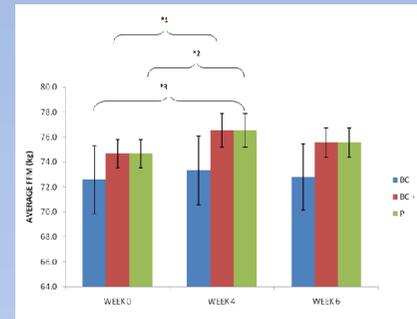


Figure 2 - Average fat free mass within groups across the 6 week intervention period.

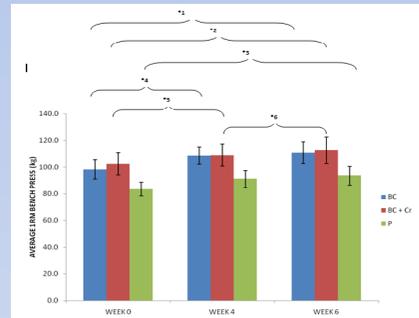


Figure 3 - Average bench press within groups across the 6 week intervention period.

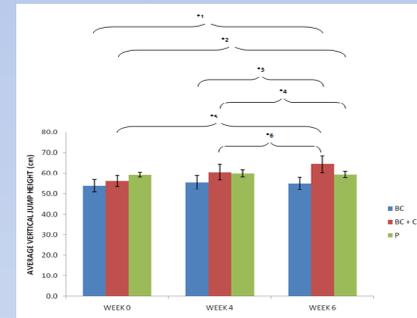


Figure 4 - Average vertical jump within groups across the 6 week intervention period.

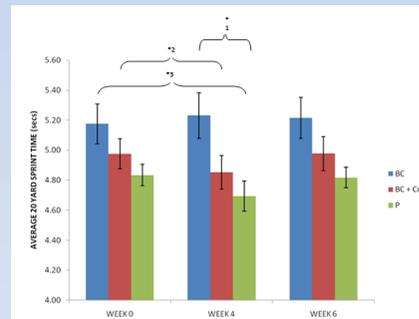
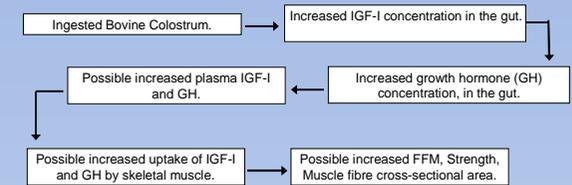


Figure 5 - Average 20 yard agility shuttle time within groups across the 6 week intervention period.

Results:

Mean group mass did not change significantly across the six week study period. Mean body fat % was only significantly decreased in the BC/Cr group after 4 weeks ($p=0.024$). Mean FFM was significantly increased in the BC/Cr group and placebo group from week 0-4 ($p=0.003$). Mean 1RM bench press showed significant increases within all groups between weeks 0-6 ($p=0.001$), the BC/Cr group showed the greatest significant improvements in strength. Mean vertical jump was only significantly improved in the BC/Cr group between weeks 0-6 and 4-6 ($p=0.006$). There was no significant improvement for mean 40 yard sprint time across the six weeks. Mean 20 yard agility time was significantly improved in the BC/Cr group between weeks 0-4 ($p=0.013$).



Discussion :

The present study is only the second to have looked at the effects of combining BC and Cr supplementation on performance characteristics in male athletes. In this study supplementation of BC improved FFM and 1RM bench press over a 6 week period. Kerksick et al. (2007) also found increases in FFM and 1RM bench press over 12 weeks with BC supplementation. The addition of Cr to BC demonstrated significantly greater improvements in FFM, body fat%, 1RM bench press, vertical jump height and 20 yard agility performance. These are important parameters in many sports, therefore underlining the potential for a combined supplementation method to enhance performance in many sporting disciplines.

Conclusion:

In summary, supplementation with bovine colostrum has shown to be a beneficial ergogenic aid to performance characteristics, further enhanced by the addition of creatine monohydrate. This study shows that performance characteristics can be significantly improved across a relatively short period of time, indicating a more acute response. The addition of a secondary supplement could have implications for future research, demonstrating that bovine colostrum enables enhanced uptake of additional nutrients via improved gastrointestinal function, therefore these findings could be applied across many sporting and health related fields.

Acknowledgements:

The authors would like to acknowledge the company Neovite, for providing the high quality supplements used in this study (www.neovite.com).

References:

Hofman, Z., Smeets, R., Verlaan, G., Van der Lugt, R. and Verstappen, P.A. (2002). The Effect of Bovine Colostrum Supplementation on Exercise Performance in Elite Field Hockey Players. *International Journal of Sport nutrition and Exercise Metabolism*, 12(4): 461-9.
 Kerksick, C.M., Rasmussen, C., Lancaster, S., Starks, M., Smith, P., Mellon, C., Greenwood, M., Almada, A. and Kreider, R. (2007). Impact of Differing Protein Sources and a Creatine Containing Nutritional Formula After 12 Weeks of Resistance Training. *Journal of Nutrition*, 23: 647-656.

