Studies to date of bovine colostrum use in humans has largely focused on supplementing younger individuals or athletes during exercise or sport training. Athletes and younger individuals have used bovine colostrum as a nutritional supplement during training to enhance immune function, improve exercise performance, and increase lean tissue mass (Shing, Hunter, & Stevenson, 2009). Colostrum enhances immune function in swimmers to prevent upper respiratory tract infections (Crooks et al., 2010). Despite the belief that bovine colostrum supplementation would enhance immune function via immunoglobulins (i.e. proteins that improve immune function) found in the supplement no effects on either saliva or plasma immunoglobulin levels were found (Brinkworth & Buckley, 2003; Crooks et al., 2010). Thus, it has been suggested that upper respiratory tract infections may result from inflammation rather than suppressed immune function, and the beneficial effect of bovine colostrum supplementation is due to increased anti-inflammatory cytokines (i.e. proteins our body produces to decrease harmful inflammation), rather than increased immunoglobulin levels (Bachert et al., 2001; Shing et al., 2007). Improved exercise performance tends to be in anaerobic type activities, such as sprints and vertical jumps; however, the effects on strength remain unclear (Shing et al., 2009). Further, no studies investigated the effects of bovine supplementation during exercise training in older individuals or ‘athletes’.

Resistance exercise training thwarts inflammation and is considered the best non-pharmacological approach to prevent sarcopenia. Sarcopenia is the age-associated loss of skeletal muscle mass and function resulting from many complex physiological and environmental factors (IWGS, 2011; Roubenoff, 2003). Sarcopenia is associated with frailty and functional impairment, ultimately decreasing the quality of life (IGWS, 2011). Generally speaking, an increase in inflammation and a decrease in levels and efficacy of growth hormones are associated with lower muscle mass and strength (i.e. sarcopenia) in older adults (Roubenoff, 2003; Visser et al., 2002). Further, aging and inflammation may alter the muscles’ response to resistance training, although the adaptive response is well preserved, just to a lesser degree (ACSM, 2009; Corsonello et al., 2010). The increased inflammation diminishes the efficacy of insulin-like growth factor-1 (IGF-1), a hormone responsible for muscle growth and repair (Degens, 2010). IGF-1 is also important for development of brain and bone tissue; a reduction in IGF-1 in older adults is associated with cognitive decline (Ceda et al., 2005) and lower bone mass (Ohlsson et al., 2011). Thus, the bioactive components and IGF-1 contained in bovine colostrum may be beneficial to preserve not only muscle mass and strength, but also bone mass and cognitive function in older adults.

The first known study investigating the effects of bovine colostrum supplementation during resistance training in older adults was recently completed (Duff et al. 2013). We determined the effects of 8 weeks of bovine colostrum supplementation versus whey protein during resistance training in 40 older adults (59.0 ± 6.0 years). Participants...
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Ms. Duff graduated from the University of Regina in 2012 with a Master of Science degree and is currently working towards a doctorate in the College of Kinesiology at the University of Saskatchewan. Her studies at the U of S focus on the effects of novel anti-inflammatory nutritional and pharmaceutical supplementation during resistance training on muscle and bone in older adults. The study involving bovine colostrum supplementation during resistance training in older adults was recently completed and accepted for publication in the *International Journal of Sport Nutrition and Exercise Metabolism* (www.ncbi.nlm.nih.gov/pubmed/24281841). Her current study involves ibuprofen supplementation following resistance training in older women. Future directions for research could involve the combined effect of bovine colostrum and ibuprofen supplementation during resistance training in older adults.

References:


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