The effect of protein timing on muscle strength and hypertrophy: a meta-analysis
Discussion
This is the first meta-analysis to directly investigate the effects of protein timing on strength and hypertrophic adaptations following long-term resistance training protocols. The study produced several novel findings. A simple pooled analysis of protein timing without controlling for covariates showed a significant effect on muscle hypertrophy (ES = 0.24 ± 0.10) with no significant effect found on muscle strength. It is generally accepted that an effect size of 0.2 is small, 0.5 is moderate, and 0.8 and above is a large, indicating that the effect of protein timing on gains in lean body mass were small to moderate. However, an expanded regression analysis found that any positive effects associated with protein timing on muscle accretion disappeared after controlling for covariates. Moreover, sub-analysis showed that discrepancies in total protein intake explained the majority of hypertrophic differences noted in timing studies. When taken together, these results would seem to refute the commonly held belief that the timing of protein intake in the immediate pre- and post-workout period is critical to muscular adaptations [3-5].