Sub-optimization in sport: elite athletes post personal bests despite caloric deficits using Fuelogics

Rowers are the most common endurance athletes using the Fuelogics system at the time of this data assessment. To explore the impact of caloric deficits on performance of Fuelogics users, rowers in the independent Fuelogics community were filtered for participation in elite programs and cutting significant fat mass over preceding training cycle(s). Erg scores (2k or 6k, depending on the season) were required between the final four weeks of the caloric deficit period or within one week of discontinuation.

Six rowers were identified (mean age 21 years) and performance data was gathered. Of the six rowers, two compete internationally for their country and the other four are nationally competitive. All were introduced to the Fuelogics system as a support tool for desired fat mass reduction within larger performance optimization goals. Reasons cited for desired fat mass loss were to make weight class qualification easier/safer or to improve speed to weight/drag ratio.

All six rowers recorded personal bests while cutting significant fat mass with the Fuelogics system (Table 1). Mean change in body weight was -7% ($p<0.05$). Mean erg scores were 1.7% better than any erg score posted before introduction to the Fuelogics system ($p<0.05$). All athletes reported changes to their nutrition intake upon introduction to the Fuelogics system (data not shown).

Δ Weight	Δ Weight per Week	PB Improvement
-10%	-0.6lbs	3.3%
-6%	-1.1lbs	1.7%
-6%	-0.5lbs	1.5%
-5%	-0.9lbs	1.5%
-6%	-0.9lbs	0.6%
-8%	-0.8lbs	*Insuff. Data*
-7%	**-0.8lbs**	**1.7%**

Table 1: weight change and improvement on all-time personal best 2k or 6k erg time to completion. Insuff. Data; one athlete recorded a personal best but could not reconcile a discrepancy between previous personal best times.

Erg score maintenance or impairment would be expected in elite rowers entering a chronic caloric deficit, likely between 0 and 12%. Periodization of caloric deficits and weight loss around training and competition schedules is typically implemented to offset decrements or stagnation in performance that would be expected in elite athletes with these goals. Less experienced athletes may see improvements despite deficits due to various training adaptation mechanisms, however these were highly trained athletes.

All six of these Fuelogics users recorded personal best times in erg tests during or immediately following significant weight loss, suggesting that their nutrition prior to Fuelogics introduction may have been highly sub-optimized. Other data (not shown) from elite and sub-elite rowers suggests that despite strong self-perceptions of nutrition intake in relation to performance, athletes make significant changes to their diet following implementation of the Fuelogics system. Recent research suggests that traditional nutrition approaches in elite programs can improve nutrition intake but often fall short of optimizing it for performance. Dietitian time and resources are often cited as limiting factors. Fuelogics appears to have significant performance benefits for elite athletes in caloric deficits, and impacts may very well be stronger for those not sacrificing short-term performance to reduce fat mass.

This data is retrospective observational data based on Fuelogics system usage provided by Fuelogics, LLC. www.Fuelogics.us