EFFECTS OF WEIGHT CYCLING ON BODY COMPOSITION AND RESTING METABOLIC RATE OF COLLEGIATE WRESTLERS

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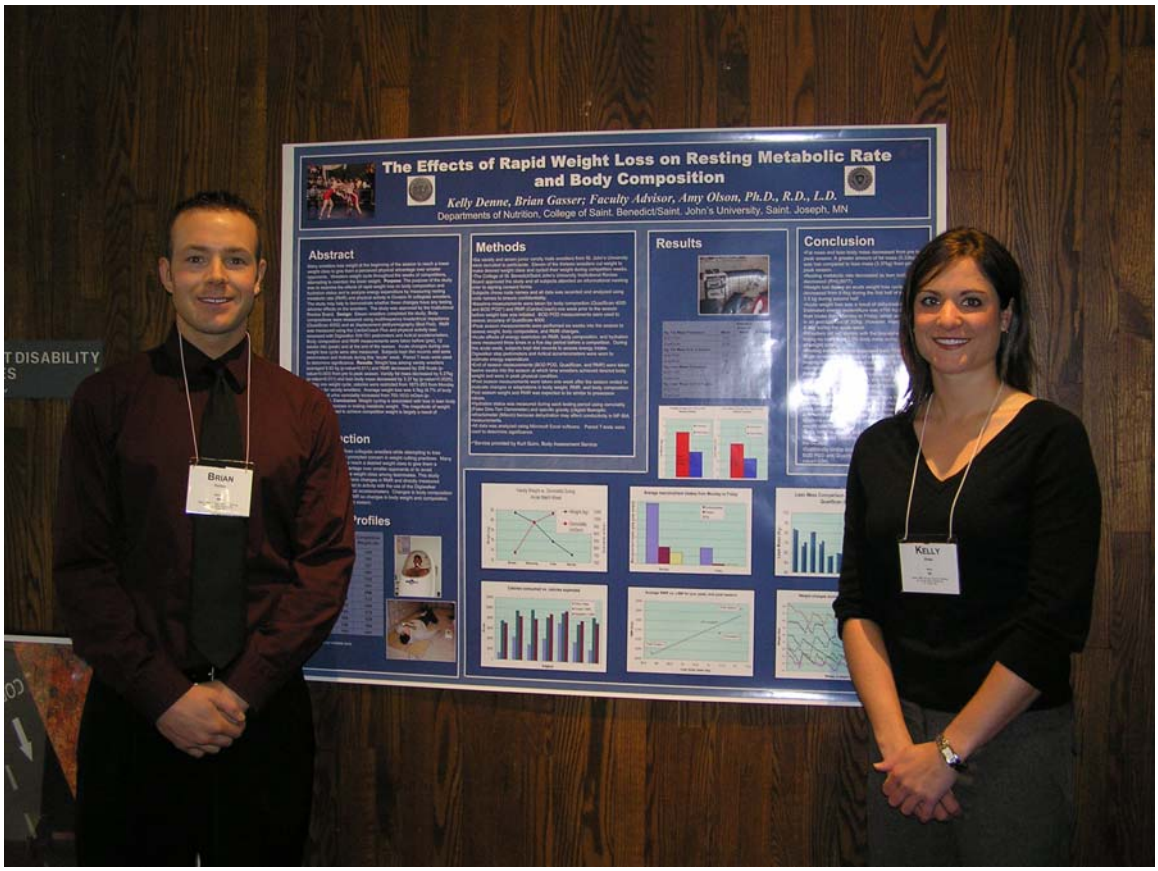
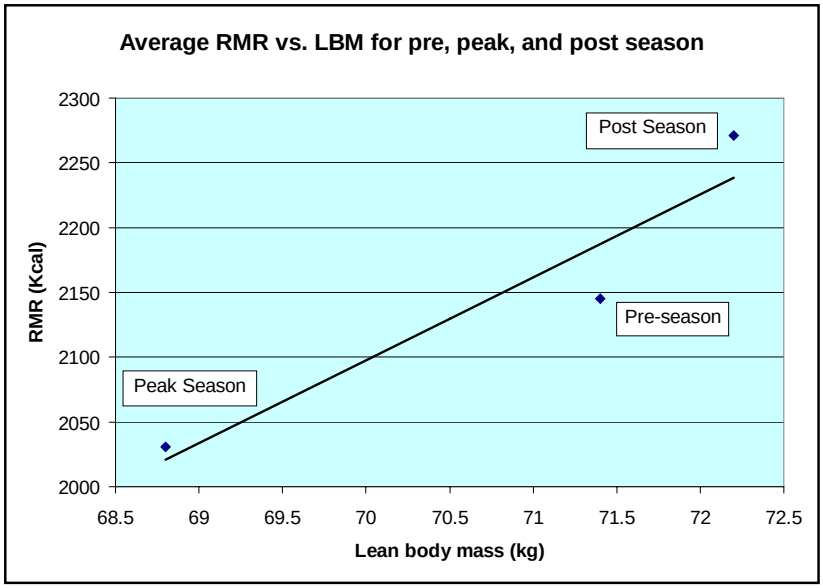


Many wrestlers lose weight at the beginning of the season to reach a lower weight class to give them a perceived physical advantage over smaller opponents. Wrestlers cycle their weight throughout the season, attempting to maintain the lower weight. **Purpose**: This study examined the effects of rapid weight loss on body composition and hydration status and analyzed energy expenditure by measuring resting metabolic rate (RMR) and physical activity in Division III wrestlers from St. John's University. The 1998 revised NCAA wrestling rules were intended to reduce risks associated with cutting weight, and this study monitored current weight loss practices. The study was approved by the College of St. Benedict/St. John's University Institutional Review Board. **Design:** Eleven wrestlers completed the study**.** Body compositions were measured using multifrequency bioelectrical impedance (QuadScan 4000) and air displacement plethysmography (Bod Pod). RMR was measured using the CardioCoach Plus and physical activity was assessed with Digiwalker SW-701 pedometers and Actical accelerometers. Body composition and RMR measurements were taken before (pre), 12 weeks into (peak) and at the end of the season. Acute changes during one weight loss cycle were also measured. Subjects completed diet records and wore pedometers and Acticals during this "acute" week. Paired T-tests were used to determine significance. **Results**: From pre to peak season: weight loss among varsity wrestlers averaged 8.7 kg (p-value=0.011), RMR decreased by 206 Kcals (p-value=0.003), fat mass decreased by 5.3 kg (p-value=0.011) and lean body mass decreased by

3.4 kg (p-value=0.0025). During one weight loss cycle: calories were restricted from 1873 on Monday to 263 on Friday for varsity wrestlers, average weight loss was 4.5 kg (6.7% of body weight), urine osmolality increased from 755-1033 mOsm (p-value=.0088), and energy expenditure determined by Acticals and RMR measurements exceeded caloric intake by 4,796 Kcals, which could account for a 0.6 kg loss. **Conclusion**: Weight loss is associated with both a loss of fat and lean body mass and a decrease in resting metabolic rate. The magnitude of weight change that occurs during an acute weight loss cycle is accomplished primarily through dehydration and only in part by the restriction of calories.



Average macronutrient intakes from Monday to Friday