Part IV

Post-Training Macronutrient Intake

Post-Training Macronutrient Intake

- **Ferguson-Stegall, L., McCleave, E., Zhenping, D., Doerner III, P.G., Liu, Y., Wang, B., Healy, M., Kleinert, M., Dessard, B., Lassiter, D.G., Kammer, L., & Ivy, J.I. (*2011*). Aerobic Exercise Training Adaptations Are Increased By Postexercise Carbohydrate-Protein Supplementation, Journal of Nutrition and Metabolism, 2011, 1 – 11.**

Post-Training Macronutrient Intake

- **Lunn, W.R., Pasiakos, S.M., Colletto, M.R., Karfonta, K.E., Carbone, J.W., Anderson, J.M., & Rodriguez, N.R. (*2012*). Chocolate Milk And Endurance Exercise Recovery: Protein Balance, Glycogen, And Performance, Medicine & Science in Sports & Exercise, 44(*4*), 682 – 691.**

Ferguson-Stegall et al. (*2011*)

- **Purpose: To investigate training adaptations subsequent to a 4.5-week aerobic endurance training program when daily, post-training nutrient provision was provided in the form of a carbohydrate-protein containing supplement, an isoenergetic carbohydrate containing supplement, or a placebo**
  - **0.94 g CHO / kg BM plus 0.31 g PRO / kg BM immediately and 1-hour post-training (*Chocolate Milk Supplement*)**
  - **1.25 g CHO / kg BM plus 0.17 g FAT / kg BM immediately and 1-hour post-training (*Carbohydrate Supplement*)**
  - **0.00 g CHO / kg BM plus 0.00 g PRO / kg BM immediately and 1-hour post-training (*Placebo*)**

Ferguson-Stegall et al. (*2011*)

- **Experimental design**
  - **Randomized, double-blinded, placebo-controlled design**
  - **Thirty-two (*32*) healthy, recreationally-active females and males**
  - **VO_2-max 35.9 $\pm$ 1.9 ml O_2 * kg^{-1} * min^{-1}**
  - **Macronutrient intake subsequent to five (5) weekly 60-minute bouts of cycle endurance exercise @ 60% (*for the initial 10-minutes*) and 75% (*for the final 50-minutes*) of VO_2-max**

Ferguson-Stegall et al. (*2011*)

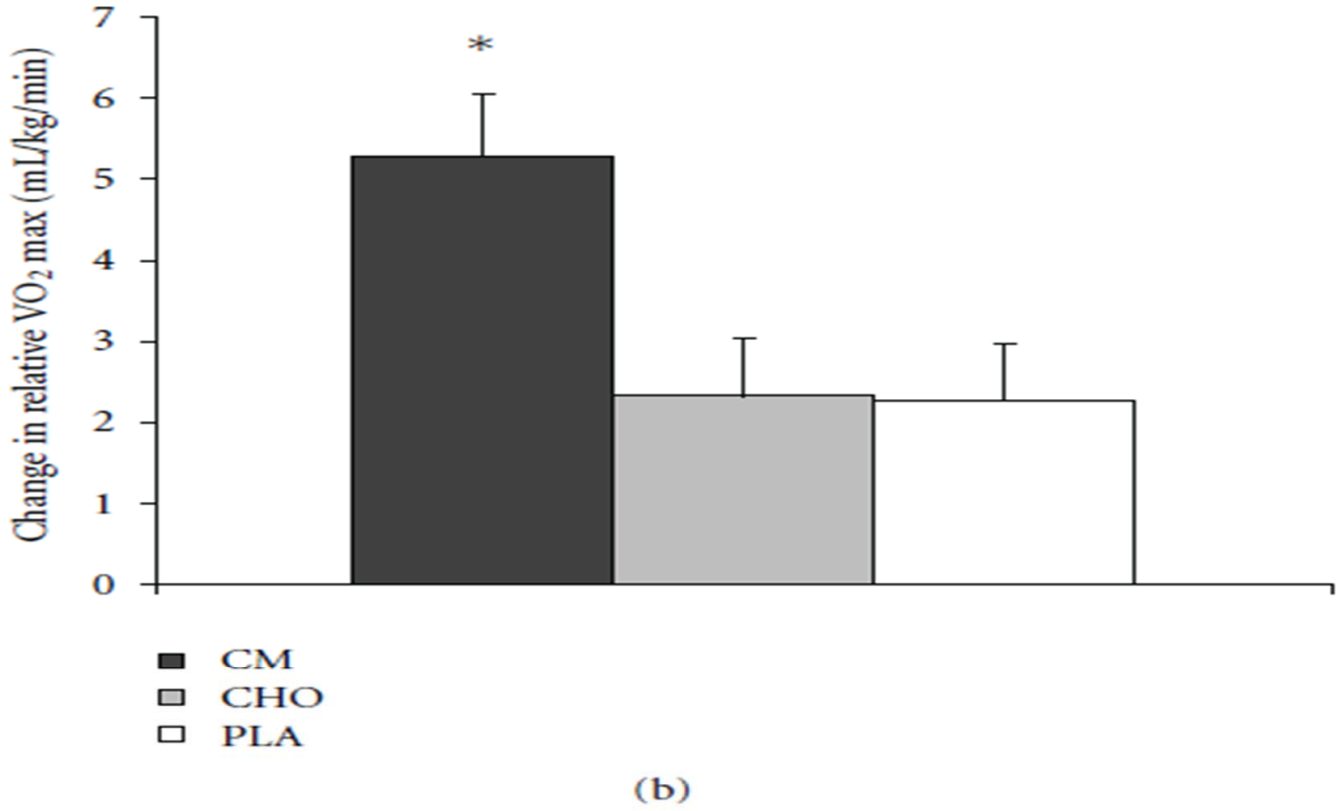
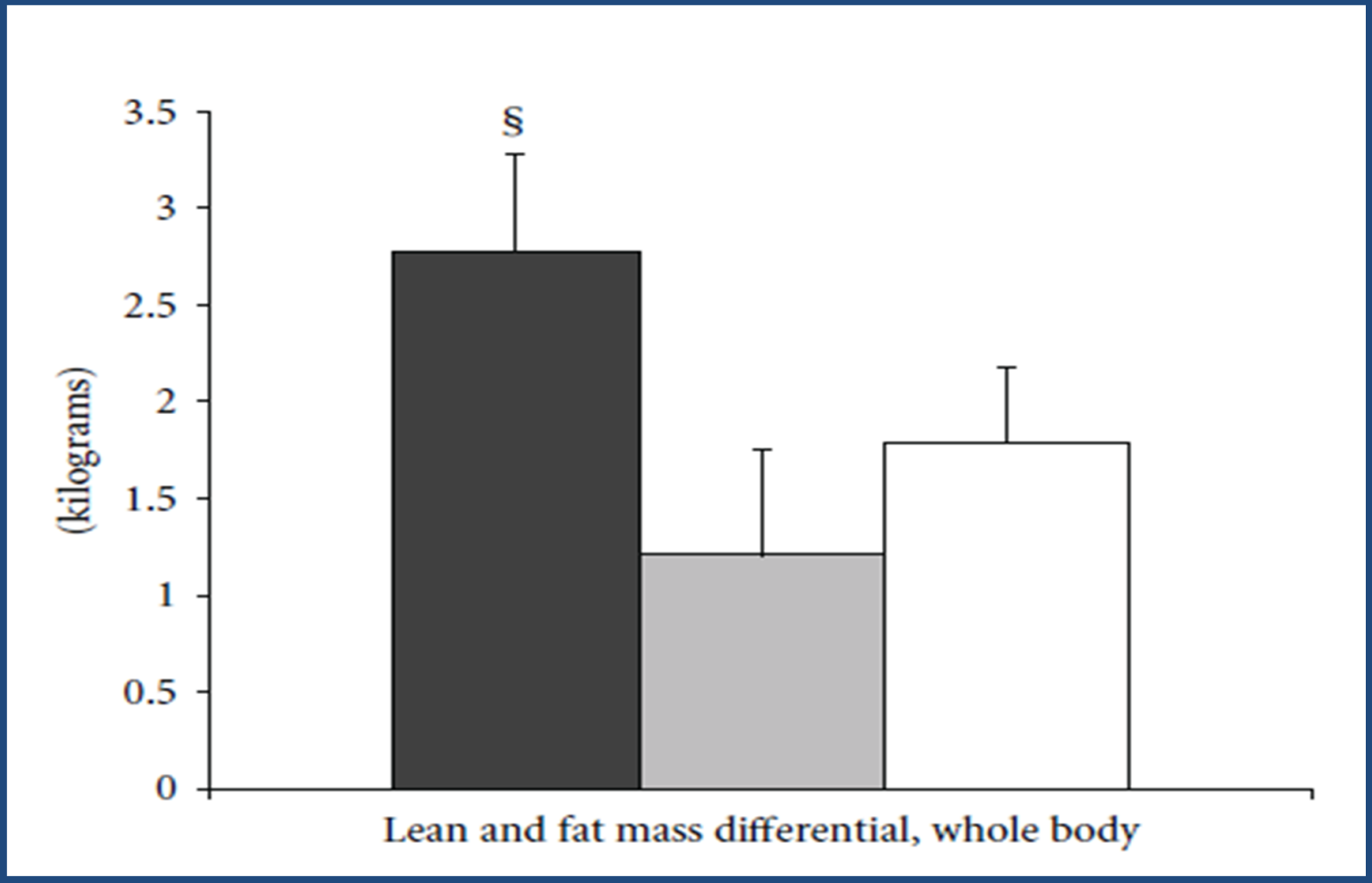


FIGURE 1: VO_2 max changes after 4.5 wks of aerobic endurance training. (a) Change from baseline in absolute VO_2 max. (b) Change from baseline in relative VO_2 max. Values are mean ± SE. Significant treatment differences: *, CM versus PLA and CHO ($P < .05$).

Ferguson-Stegall et al. (*2011*)



Ferguson-Stegall et al. (*2011*)

- **Data Interpretation**
  - **Consumption of a daily, post-training chocolate milk supplement relative to either a carbohydrate-only supplement or a placebo is associated with an approximate two-fold (*2-fold*) greater (*i.e. 100%*) percentage increase in relative VO_2-max**
  - **Body composition improvements, quantified by a lean and fat mass differential, were significantly greater in the chocolate milk supplement group relative to the carbohydrate supplement group**

Ferguson-Stegall et al. (*2011*)

- **Practical Application**
  - **Consume an individualized, mass-specific combination of carbohydrate and protein in the immediate post-training period including approximately 1.00 to 1.25 grams of carbohydrate per kilogram body mass and approximately 0.30 grams of protein per kilogram body mass**

Ferguson-Stegall et al. (*2011*)

Body Weight (lbs.)	Body Mass (kilograms)	Post-Training CHO Intake (grams)	Post-Training CHO Intake (calories)	Post-Training PRO Intake (grams)	Post-Training PRO Intake (calories)	Post-Training Caloric Intake (calories)	Post-Training Chocolate Milk (ounces)
96	43.5	52	199	13	52	251	13.2
98	44.4	53	203	13	53	256	13.5
100	45.4	54	207	14	54	261	13.7
105	47.6	57	217	14	57	274	14.4
107	48.5	58	221	15	58	280	14.7
108	49.0	59	223	15	59	282	14.8
110	49.9	60	227	15	60	287	15.1
112	50.8	61	232	15	61	293	15.4
115	52.2	63	238	16	63	300	15.8
117	53.1	64	242	16	64	306	16.1
120	54.4	65	248	16	65	313	16.5
122	55.3	66	252	17	66	319	16.8
125	56.7	68	259	17	68	327	17.2
126	57.1	69	261	17	69	329	17.3
130	59.0	71	269	18	71	340	17.9
132	59.9	72	273	18	72	345	18.1
134	60.8	73	277	18	73	350	18.4
135	61.2	73	279	18	73	353	18.6
136	61.7	74	281	19	74	355	18.7
138	62.6	75	285	19	75	360	19.0
139	63.0	76	287	19	76	363	19.1
140	63.5	76	290	19	76	366	19.2
142	64.4	77	294	19	77	371	19.5
145	65.8	79	300	20	79	379	19.9
146	66.2	79	302	20	79	381	20.1
150	68.0	82	310	20	82	392	20.6