

PUBLISHER CORRECTION

Open Access



Publisher Correction: Impact of physical activity on caloric and macronutrient intake in children and adolescents: a systematic review and meta-analysis of randomized controlled trials

Heiko Hahn¹, Manuel Friedel¹, Claudia Niessner², Stephan Zipfel¹ and Isabelle Mack^{1*}

Correction: *Int J Behav Nutr Phys Act* 21, 76 (2024)

<https://doi.org/10.1186/s12966-024-01620-8>

After the publication of the Original Article [1], a type-setting error was identified in Table 1. Visible lines in the XML version and incorrect spacings in the PDF version caused data from the same category to appear separated.

The correct format of Table 1 is as follows:

The original article can be found online at <https://doi.org/10.1186/s12966-024-01620-8>.

*Correspondence:

Isabelle Mack
isabelle.mack@uni-tuebingen.de

¹ Department of Psychosomatic Medicine and Psychotherapy, University Medical Hospital Tübingen, Osianderstr. 5, Tübingen 72076, Germany

² Institute of Sports and Sport Science, Karlsruhe Institute of Technology, Engler-Bunte-Ring 15, Karlsruhe 76131, Germany



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

Table 1 Overview of characteristics of trials

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)
Ajibewa et al. 2017	n: 26 (NR) Age: 7–11 y BMI: normal weight, not further specified	Modality: Static stretching, standing and yoga poses Duration: 20 × 2 min Intensity: Resting heart rate + heart rate reserve * 25% EE: NR	Pre-intervention: Three standardized meals Post-intervention: One meal ad libitum	CON: 999 \pm 62 (SE) EX: 982 \pm 50 (SE) \leftrightarrow	NR
		Modality: Push-ups, sit-ups, and age-appropriate calisthenics Duration: 20 × 2 min Intensity: Resting heart rate + heart rate reserve * 50% EE: NR		CON: 999 \pm 62 (SE) EX: 926 \pm 63 (SE) \leftrightarrow	
		Modality: Vigorous calisthenics (e.g., jumping jacks) Duration: 20 × 2 min Intensity: Resting heart rate + heart rate reserve * 75% EE: NR		CON: 999 \pm 62 (SE) EX: 1016 \pm 76 (SE) \leftrightarrow	
	n: 13 (NR) Age: 7–11 y BMI: obese, not further specified	Modality: Static stretching, standing and yoga poses Duration: 20 × 2 min Intensity: Resting heart rate + heart rate reserve * 25% EE: NR		CON: 1145 \pm 88 (SE) EX: 1204 \pm 71 (SE) \leftrightarrow	
		Modality: Push-ups, sit-ups, and age-appropriate calisthenics Duration: 20 × 2 min Intensity: Resting heart rate + heart rate reserve * 50% EE: NR		CON: 1145 \pm 88 (SE) EX: 1066 \pm 89 (SE) \leftrightarrow	
		Modality: Vigorous calisthenics (e.g., jumping jacks) Duration: 20 × 2 min Intensity: Resting heart rate + heart rate reserve * 75% EE: NR		CON: 1145 \pm 88 (SE) EX: 1261 \pm 103 (SE) \leftrightarrow	

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Bozinoński et al. 2009	n: 29 (14 m, 15 f) Age: 12.1 \pm 0.4 y BMI: 54.3rd \pm 5.3 percentile	Modality: Treadmill Duration: 15 min Intensity: Ventilation Threshold EE: 63 \pm 7 kcal	Pre-intervention: Standardized breakfast Post-intervention: 250 mL water, pizza meal ad libitum 30 min post-exercise	CON: 1078 \pm 101 (SE) EX: 1060 \pm 103 (SE) \leftrightarrow	NR
Farnbach et al. 2016	n: 15 m Age: 13.8 \pm 1.5 y BMI: 31.8 \pm 4.2 kg/m ²	Modality: Cycling Duration: 45 min Intensity: 65% VO ₂ max EE: 399 \pm 75 kcal	Pre-intervention: Standardized breakfast Post-intervention: Buffet meal ad libitum 30 min post-exercise	CON: 1116 \pm 243 EX: 1037 \pm 260 \downarrow \leftrightarrow	Protein (%) CON: 29.4 \pm 7.2 EX: 30.5 \pm 6.7 \leftrightarrow Fat (%) CON: 16.5 \pm 4.2 EX: 16.6 \pm 4.2 \leftrightarrow CHO (%) CON: 53.4 \pm 11.0 EX: 52.3 \pm 10.5 \leftrightarrow
Farnbach, Masterson et al. 2016	n: 20 (12 m, 8 f) Age: 10.3 \pm 1.1 y BMI: 41.6 \pm 21.7 percentile	Modality: Cycling Duration: 30 min Intensity: 70% VO ₂ max EE: 534 \pm 263 kcal	Pre-intervention: Standardized breakfast Post-intervention: Standardized snack, lunch and dinner meal ad libitum, timing not reported	CON: 2088 \pm 497 EX: 2171 \pm 566 \leftrightarrow	Protein (kcal) CON: 196 \pm 67 EX: 207 \pm 68 \uparrow Fat (kcal) CON: 655 \pm 155 EX: 694 \pm 181 \uparrow CHO (kcal) CON: 1235 \pm 295 EX: 1269 \pm 337 \leftrightarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Fearnbach, Silvert et al. 2017	n: 14 m Age: 13.9 \pm 1.1 y BMI: 31.6 \pm 4.5 kg/m ²	Modality: Cycling Duration: 45 min Intensity: 65% VO ₂ max EE: 373 \pm 57 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Buffet meal ad libitum 30 min post-exercise	CON: 1091 \pm 252 EX: 965 \pm 214 \downarrow	Protein (%) CON: 31.1 \pm 5.5 EX: 31.8 \pm 4.8 \leftrightarrow Fat (%) CON: 17.5 \pm 3.2 EX: 17.1 \pm 3.3 \leftrightarrow CHO (%) CON: 50.8 \pm 8.3 EX: 50.4 \pm 7.7 \leftrightarrow
	n: 14 m Age: 13.7 \pm 1.1 y BMI: 19.2 \pm 3.2 kg/m ²	Modality: Cycling Duration: 45 min Intensity: 65% VO ₂ max EE: 241 \pm 93 kcal		CON: 854 \pm 362 EX: 744 \pm 246 \leftrightarrow	Protein (%) CON: 28.0 \pm 7.2 EX: 28.1 \pm 5.3 \leftrightarrow Fat (%) CON: 16.4 \pm 4.9 EX: 16.1 \pm 4 \leftrightarrow CHO (%) CON: 55.1 \pm 11.1 EX: 52.2 \pm 8.6 \leftrightarrow
Fillion et al. 2020	n: 18 (12 m, 6 f) Age: 12.7 \pm 1.3 y BMI: 33.3 \pm 6.5 kg/m ²	Modality: Cycling Duration: 30 min Intensity: 65% VO ₂ max EE: 169 \pm 44 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Buffet lunch meal ad libitum 30 min post-exercise; dinner buffet meal ad libitum	CON: 2175 \pm 330 EX: 2277 \pm 476 \leftrightarrow	Protein (%) CON: 21.3 \pm 2.5 EX: 21.0 \pm 2.0 \leftrightarrow Fat (%) CON: 30.7 \pm 5.8 EX: 31.2 \pm 4.8 \leftrightarrow CHO (%) CON: 47.8 \pm 7.4 EX: 47.4 \pm 6.1 \leftrightarrow
			Pre-Intervention: Standardized breakfast Post-Intervention:	CON: 2175 \pm 330 EX: 1925 \pm 360 \downarrow	Protein (%) CON: 21.3 \pm 2.5 EX: 20.6 \pm 2.3 \leftrightarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Fillion, Beauleau et al. 2020	n: 17 (9m, 8f) Age: 12.8 \pm 1.4 y BMi: 33.4 \pm 5.7 kg/m ²	Modality: Cycling Duration: 30 min Intensity: 65% VO2max EE: 135 kcal \pm NR	Buffet lunch meal ad libitum 90 min post-exercise; dinner/buffet meal ad libitum	CON: 1997 \pm 514 Ex: 1939 \pm 501 \leftrightarrow	Fat (%) CON: 30.7 \pm 5.8 Ex: 30.5 \pm 5.7 \leftrightarrow CHO (%) CON: 47.8 \pm 7.4 Ex: 48.7 \pm 7.3 \leftrightarrow
Fillion, Mathieu et al. 2020	n: 15 (6m, 9f) Age: 13.1 \pm 1.4 y BMi: 34.7 \pm 6.0 kg/m ²	Modality: Cycling Duration: 30 min Intensity: 65% VO2max EE: 186 \pm 52 kcal	Pre-Intervention: Not clearly reported Post-Intervention: Lunch ad libitum immediately post-exercise; dinner/buffet meal ad libitum	CON: 2004 \pm 430 Ex: 1948 \pm 416 \leftrightarrow	Protein (%) CON: NR EX: NR \leftrightarrow Fat (%) CON: NR EX: NR \leftrightarrow CHO (%) CON: NR EX: NR \leftrightarrow
			Pre-Intervention: Standardized breakfast Post-Intervention: Lunch meal ad libitum 180 min post-exercise; dinner/buffet meal ad libitum	CON: 2004 \pm 430 Ex: 1948 \pm 416 \leftrightarrow	Protein (%) CON: 22.0 \pm 2.5 Ex: 24.1 \pm 3.7 \leftrightarrow Fat (%) CON: 30.8 \pm 4.8 Ex: 27.1 \pm 7.0 \leftrightarrow CHO (%) CON: 46.9 \pm 6.4 Ex: 48.7 \pm 8.9 \leftrightarrow
			Pre-Intervention: Standardized breakfast Post-Intervention: Lunch meal ad libitum 60 min post-exercise; dinner/buffet meal ad libitum	CON: 2004 \pm 430 Ex: 1820 \pm 459 \leftrightarrow	Protein (%) CON: 22.0 \pm 2.5 Ex: 23.5 \pm 3.7 \uparrow Fat (%) CON: 30.8 \pm 4.8 Ex: 26.7 \pm 8.1 \leftrightarrow CHO (%) CON: 46.9 \pm 6.4 Ex: 49.0 \pm 10.5 \leftrightarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Masurier et al. 2018	n: 20 f Age: 13.3 \pm 1.0 y BMI: 31.6 \pm 3.9 kg/m ²	Modality: cycling Duration: 20 min Intensity: Ventilation Threshold (54.1 \pm 5.4% of VO _{2max}) EE: 117 \pm 22 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Buffet meal ad libitum 30 min post-exercise	CON: 738 \pm 320 EX: 854 \pm 450 \leftrightarrow	Protein (%) CON: 16.3 \pm 4.2 EX: 18.2 \pm 4.5 \leftrightarrow Fat (%) CON: 9.7 \pm 2.6 EX: 11.5 \pm 11.5 \leftrightarrow CHO (%) CON: 71.1 \pm 13.1 EX: 69.9 \pm 7.4 \leftrightarrow
		Modality: Cycling Duration: 40 min Intensity: Ventilation Threshold (54.1 \pm 5.4% of VO _{2max}) EE: 235 \pm 44 kcal		CON: 738 \pm 320 EX: 806 \pm 375 \leftrightarrow	Protein (%) CON: 16.3 \pm 4.2 EX: 17.5 \pm 3.2 \leftrightarrow Fat (%) CON: 9.7 \pm 2.6 EX: 11.1 \pm 2.7 \leftrightarrow CHO (%) CON: 71.1 \pm 13.1 EX: 71.0 \pm 5.4 \leftrightarrow
Miguett et al. 2018	n: 33 (12 m, 21 f) Age: 13.0 \pm 0.9 y BMI: 35 \pm 4.3 kg/m ²	Modality: Cycling Duration: 15 min (5 \times 2 min high, 30 s. Low intensity) Intensity: High intensity intervals EE: 102 \pm 21 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Lunch buffet ad libitum 30 min post-exercise; dinner buffet ad libitum	CON: 2177 \pm 471 EX: 2062 \pm 460 \downarrow	Protein (%) CON: 22.6 \pm 3.4 EX: 22.7 \pm 3.3 \leftrightarrow Fat (%) CON: 32.7 \pm 6.1 EX: 31.9 \pm 5.9 \leftrightarrow CHO (%) CON: 45.3 \pm 7.1 EX: 46.1 \pm 7.03 \leftrightarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Morris et al. 2018	n: 10 (5 m, 5 f) Age: 9.8 \pm 0.6 y BMI: 18.3 \pm 2.6 kg/m ²	Modality: Sprints Duration: 22 min (8 \times 30 s) Intensity: high intensity intervals EE: NR	Pre-intervention: Same breakfast on both experimental days Post-intervention: Lunch meal ad libitum 5–10 min post-exercise	CON: 500 \pm 69 EX: 492 \pm 14 \leftrightarrow	Protein (g) CON: 12.7 \pm 1.2 EX: 12.5 \pm 1.5 \leftrightarrow Fat (g) CON: 23.4 \pm 3.2 EX: 22.9 \pm 3.7 \leftrightarrow CHO (g) CON: 60.2 \pm 9.5 EX: 58.4 \pm 11.6 \leftrightarrow
Nemet et al. 2010	n: 22 (7 m, 15 f) Age: 9.1 \pm 0.6 y BMI: 23.9 \pm 0.6 kg/m ²	Modality: Aerobic games Duration: 45 min Intensity: high EE: 9.6 kcal / kg Bodyweight (BW)	Pre-Intervention: Controlled diet 24 h prior to experimental days Post-intervention: Lunch buffet ad libitum 30–45 min post-exercise	CON: 806 \pm 51 (SE) EX: 935 \pm 81 (SE) \uparrow	NR

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Saunders et al. 2013	n: 20 (8 m, 12 f) Age: 12.2 \pm 0.9 y BMI: 18.6 \pm 4.3 kg/m ²	Modality: Walking Duration: 2 min every 20 min (42 min total) Intensity: low EE: 744 \pm 141 kcal (in 9 h)	Pre-Intervention: Standardized breakfast Post-Intervention: Standardized lunch; dinner buffet ad libitum 3 h post-exercise	CON: 1176 \pm 459 EX: 1218 \pm 467 \leftrightarrow	Protein (%) CON: 10.68 \pm 2.51 EX: 11.46 \pm 3.32 \leftrightarrow Fat (%) CON: 34.51 \pm 7.3 EX: 33.3 \pm 8.1 \leftrightarrow CHO (%) CON: 54.81 \pm 7.6 EX: 55.24 \pm 9 \leftrightarrow
Thivel, Isacco, Rousset et al. 2011	n: 12 (5 m, 7 f) Age: 14.4 \pm 1.5 y BMI: 35.1 \pm 7.6 kg/m ²	Modality: Walking + Treadmill Duration: 2 min every 20 min (42 min total) + 40 min treadmill Intensity: 20 min at 60% VO _{2max} + 20 min at 30% VO _{2max} EE: 970 \pm 219 kcal (in 9 h)	Modality: Cycling Duration: 30 min Intensity: 70% VO _{2max} EE: 298 \pm 28 kcal	CON: 1176 \pm 459 EX: 1265 \pm 503 \leftrightarrow	Protein (%) CON: 10.68 \pm 2.51 EX: 10.71 \pm 3.13 \leftrightarrow Fat (%) CON: 34.51 \pm 7.3 EX: 35.61 \pm 9.38 \leftrightarrow CHO (%) CON: 54.81 \pm 7.6 EX: 53.7 \pm 9.1 \leftrightarrow
Thivel, Isacco, Taillardat et al. 2011	n: 14 (7 m, 7 f) Age: 14.1 \pm 1.8 y BMI: 33.9 \pm 7.5 kg/m ²	Modality: Cycling Duration: 3 \times 10 min (2 min rest in between) Intensity: 70% VO _{2max} EE: 299 \pm 29 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Lunch buffet ad libitum 30 min post-exercise; dinner buffet ad libitum	CON: 2214 \pm 222 EX: 1935 \pm 220 \downarrow	Protein (kcal) CON: 192 \pm 33 EX: 206 \pm 42 NR Fat (kcal) CON: 327 \pm 66 EX: 373 \pm 64 NR CHO (kcal) CON: 453 \pm 120 EX: 367 \pm 76 NR

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Thivel et al. 2012	n: 15 m Age: 13.5 \pm 0.9 y BMI: 30.7 \pm 4.1 kg/m ²	Modality: Cycling Duration: 59 \pm 6 min Intensity: 40% VO ₂ max EE: 336 \pm 50 kcal	Pre-intervention: Calibrated breakfast Post-intervention: Lunch buffet ad libitum 30 min post-exercise; dinner buffer ad libitum; breakfast buffet ad libitum the next morning	CON: 3620 \pm 694 EX: 3820 \pm 584 \leftrightarrow	Protein (%) CON: 20.72 \pm 4.69 EX: 19.5 \pm 3.21 \leftrightarrow Fat (%) CON: 20.72 \pm 4.69 EX: 43.44 \pm 9.58 \leftrightarrow CHO (%) CON: 34.22 \pm 8.73 EX: 37.04 \pm 10.36 \leftrightarrow
Thivel et al. 2013	n: 10 (4 m, 6 f) Age: 13.2 \pm 0.9 y BMI: 33.28 \pm 3.65 kg/m ²	Modality: Cycling Duration: 3 \times 10 min (1.5 min break in between) Intensity: 75% VO ₂ max EE: 243 \pm 21 kcal	Pre-intervention: Standardized breakfast Post-intervention: Lunch buffet ad libitum 30 min post-exercise; dinner buffer ad libitum	CON: 178.7 \pm 404 Breakfast: 1869 \pm 294 EX: 1307 \pm 304 \downarrow Fat (%) CON: 14.22 \pm 2.24 EX: 16.9 \pm 2.34 \uparrow CHO (%) CON: 60.32 \pm 6.14 EX: 53.28 \pm 6.44 \downarrow	Protein (%) CON: 25.45 \pm 3.93 EX: 29.75 \pm 4.11 \uparrow Fat (%) CON: 14.22 \pm 2.24 EX: 16.9 \pm 2.34 \uparrow CHO (%) CON: 60.32 \pm 6.14 EX: 53.28 \pm 6.44 \downarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean ± SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Thivel et al. 2014	n: 10 (4 m, 6 f) Age: 13.2 ± 0.9 y BMI: 33.28 ± 3.65 kg/m ²	Modality: Cycling Duration: 3 × 10 min (1.5 min break in between) Intensity: 75% VO _{2max} EE: 243 ± 21 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Lunch buffet ad libitum; dinner buffet ad libitum, timing not reported	CON: 1787 ± 404 EX: 1306 ± 304 * \downarrow	Protein (g) CON: 111.21 ± 26.25 EX: 96.18 ± 28.8 \leftrightarrow Fat (g) CON: 24.84 ± 6.29 EX: 21.48 ± 7.31 \leftrightarrow CHO (g) CON: 276.8 ± 64.48 EX: 180.69 ± 37.19 \downarrow
	n: 9 (3 m, 6 f) Age: 13.3 ± 0.9 y BMI: 19.11 ± 2.13 kg/m ²	Modality: Cycling Duration: 3 × 10 min (1.5 min break in between) Intensity: 75% VO _{2max} EE: NR		CON: 1226 ± 322 EX: 1238 ± 320 \leftrightarrow	Protein (g) CON: 86.05 ± 25.24 EX: 83.5 ± 25.33 \leftrightarrow Fat (g) CON: 20.06 ± 4.9 EX: 20.05 ± 5.84 \leftrightarrow CHO (g) CON: 174.43 ± 49.04 EX: 180 ± 48.4 \leftrightarrow
Thivel et al. 2015	n: 14 m Age: 16.1 ± 0.3 y BMI: 25.8 ± 2.1 kg/m ²	Modality: Cycling Duration: 18 ± 3 min Intensity: 75% VO _{2max} EE: 549 ± 3 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Lunch buffet ad libitum 30 min post-exercise; snack buffet ad libitum; dinner buffet ad libitum	CON: 2702 ± 344 EX: 3097 ± 405 \leftrightarrow	Protein (%) CON: 33.2 ± 3.7 EX: 29.3 ± 6.3 \leftrightarrow Fat (%) CON: 13.5 ± 3.8 EX: 19.1 ± 7 \downarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in Intake (\uparrow , \downarrow , \leftrightarrow)
Thivel et al. 2017	n: 14 (7 m, 7 f) Age: 14.2 \pm 1 y BMI: 36.6 \pm 5.0 kg/m ²	Modality: Cycling Duration: until 25% energy expenditure of energy consumed during lunch on CON day Intensity: 65% VO ₂ max EE: 254 \pm 92 kcal	Pre-Intervention: Standardized breakfast Post-Intervention: Lunch buffet ad libitum 90 min post-exercise; dinner buffet ad libitum	CON: 742 \pm 297 EX: 971 \pm 225 \uparrow	Protein (%) CON: 17.3 \pm 4.5 EX: 14.9 \pm 3.2 \leftrightarrow Fat (%) CON: 21.6 \pm 7.8 EX: 36.6 \pm 10.9 \leftrightarrow CHO (%) CON: 61.1 \pm 10.1 EX: 48.3 \pm 9.0 \leftrightarrow
	Modality: Rugby session Duration: 60 min Intensity: moderate-to-high EE: 549 \pm 3 Kcal			CON: 2703 \pm 344 EX: 2942 \pm 294 \leftrightarrow	Protein (%) CON: 33.2 \pm 3.7 EX: 30.4 \pm 4.6 \leftrightarrow Fat (%) CON: 13.5 \pm 3.8 EX: 16.6 \pm 4.2 \leftrightarrow CHO (%) CON: 52.6 \pm 5.6 EX: 51 \pm 8.3 \leftrightarrow

Table 1 (continued)

Study	Population	Exercise characteristics	Meal characteristics	Absolute Energy Intake in kcal (mean \pm SD) Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)	Macronutrients Statistically significant change in intake (\uparrow , \downarrow , \leftrightarrow)
Thivel et al. 2020	n: 14 (6 m, 8 f) Age: 12.8 \pm 0.9 y BMI: 34.8 \pm 5.7 kg/m ² EE: 177 \pm 39 kcal	Modality: Cycling Duration: 30 min Intensity: 65% VO2max	Pre-Intervention: Standardized breakfast Post-Intervention: Lunch buffet ad libitum 105 min post-exercise; dinner buffet ad libitum	CON: 1769 \pm 532 EX: 1678 \pm 501 \leftrightarrow	Protein (%) CON: NR EX: NR \leftrightarrow Fat (%) CON: NR EX: NR \leftrightarrow CHO (%) CON: NR EX: NR \leftrightarrow
			Pre-Intervention: Standardized breakfast Post-Intervention: Snack to replace exercise induced energy deficit as after-load Lunch buffet ad libitum 105 min post-exercise; dinner buffet ad libitum	CON: 1769 \pm 532 EX: 1849 \pm 486 \leftrightarrow	Protein (%) CON: NR EX: NR \leftrightarrow Fat (%) CON: NR EX: NR \leftrightarrow CHO (%) CON: NR EX: NR \leftrightarrow
Varley-Campbell et al. 2017	n: 38 (20 m, 18 f) Age: 13.0 \pm 0.3 y BMI: 16.8 \pm 2.2 kg/m ²	Modality: Cycling Duration: until 1 MJ expended 31 to 56 min (44 \pm 7 min) Intensity: moderate EE: 239 kcal	Pre-Intervention: Same breakfast on all experimental days, standardized snack in SK groups	CON: 1441 \pm 113 (SE) CON + SK: 1367 \pm 94 (SE) \leftrightarrow	NR
			Post-Intervention: meal ad libitum 65 min post-exercise	EX: 1496 \pm 111 (SE) EX + SK: 1450 \pm 103 (SE) \leftrightarrow	SK = Snack (containing 239 kcal)

CON Control group, EX Exercise group, VO2max maximal oxygen uptake, VT Ventilation threshold, EE Energy expenditure, NR Not reported, SD standard deviation, SE standard error

 \uparrow intake significantly higher \downarrow intake significantly lower \leftrightarrow no significant change

The Original Article has been corrected.

The Publisher apologizes for the inconvenience caused
to the authors and readers.

Published online: 23 September 2024

Reference

1. Hahn H, Friedel M, Niessner C, et al. Impact of physical activity on caloric and macronutrient intake in children and adolescents: a systematic review and meta-analysis of randomized controlled trials. *Int J Behav Nutr Phys Act*. 2024;21:76. <https://doi.org/10.1186/s12966-024-01620-8>.