Institutionen för kost- och idrottsvetenskap

Opportunities and challenges with the shift to climate-adapted food consumption

Balancing nutrition, climate impact, and acceptance in public and private meals

av

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Abstract

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This thesis explores the transition toward climate-adapted food consumption through four interconnected studies that balance carbon footprint (CO_2e) reduction with nutritional adequacy, revealing tensions in our shift toward sustainable diets. Rather than presenting findings individually, results are organized around three themes: school meals as climate champions, gender's role in climate-adapted food practices, and the relationship between physical activity and CO_2e.

The analysis of Swedish school meal menus revealed a troubling relationship—as CO_2e emissions decreased, so did iron bioavailability. This was particularly evident in soy-based meals, which despite containing high total iron, delivered minimal iron absorption. None of the analyzed menus provided enough absorbable iron for female pupils with higher needs. To address this challenge, hybrid recipes combining plant ingredients with modest amounts of meat, together with vitamin C rich foods were developed, achieving significant CO_2e reductions while maintaining adequate iron levels and high consumer acceptance.

Gender emerged as a powerful lens for understanding sustainable food transitions. Women demonstrated stronger climate consciousness in food choices but faced greater nutritional vulnerabilities when adopting low-CO_2e diets. Female participants consistently consumed less energy than recommended, creating a nutritional deficit affecting micronutrient intake. This was especially concerning among physically active women with elevated nutritional needs. Women often initiated sustainable food consumption within households.

The investigation of recreational athletes uncovered increasing dietary CO_2e emissions corresponding to activity intensity, driven primarily by animal-based protein consumption. However, several participants achieved lower CO_2e emissions while maintaining high performance through strategic incorporation of plant-based protein sources, challenging assumptions about athletic performance and climate cost.

The thesis emphasize that promoting climate-adapted food consumption requires context-specific approaches rather than universal solutions. The research questions whether low-CO_2e diets are inherently health-promoting and highlights the importance of incorporating iron bioavailability metrics to ensure climate goals do not compromise individual health, particularly for women and adolescents.