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Original Research

Fluid Consumption and Sweating in National Football League and Collegiate Football Players With Different Access to Fluids During Practice

Sandra Fowkes Godek, PhD ATC¹, Arthur R. Bartolozzi, MD², Chris Peduzzi, MA ATC³, Scott Heinerichs, MAT¹, Eugene Garvin, BS¹, Eric Sugarman, MEd ATC⁴, and Richard Burkholder, MS ATC³

¹West Chester University, West Chester, PA

²3B Orthopedics, Philadelphia, PA

³Philadelphia Eagles, Philadelphia, PA

⁴Minnesota Vikings, Eden Prairie, MN

Abstract

Context: Considerable controversy regarding fluid replacement during exercise currently exists.

Objective: To compare fluid turnover between National Football League (NFL) players who have constant fluid access and collegiate football players who replace fluids during water breaks in practices.

Design: Observational study.

Setting: Respective preseason training camps of 1 National Collegiate Athletic Association Division II (DII) football team and 1 NFL football team. Both morning and afternoon practices for DII players were 2.25 hours in length, and NFL players practiced for 2.25 hours in the morning and 1 hour in the afternoon. Environmental conditions did not differ.

Patients or Other Participants: Eight NFL players (4 linemen, 4 backs) and 8 physically matched DII players (4 linemen, 4 backs) participated.

Intervention(s): All players drank fluids only from their predetermined individual containers. The NFL players could consume both water and sports drinks, and the DII players could only consume water.

Main Outcome Measure(s): We measured fluid consumption, sweat rate, total sweat loss, and percentage of sweat loss replaced. Sweat rate was calculated as change in mass adjusted for fluids consumed and urine produced.

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
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Results: Mean sweat rate was not different between NFL (2.1 ± 0.25 L/h) and DII (1.8 ± 0.15 L/h) players ($F_{1,12} = 2, P = .18$) but was different between linemen (2.3 ± 0.2 L/h) and backs (1.6 ± 0.2 L/h) ($t_{14} = 3.14, P = .007$). We found no differences between NFL and DII players in terms of percentage of weight loss ($t_7 = -0.03, P = .98$) or rate of fluid consumption ($t_7 = -0.76, P = .47$). Daily sweat loss was greater in DII (8.0 ± 2.0 L) than in NFL (6.4 ± 2.1 L) players ($t_7 = -3, P = .02$), and fluid consumed was also greater in DII (5.0 ± 1.5 L) than in NFL (4.0 ± 1.1 L) players ($t_7 = -2.8, P = .026$). We found a correlation between sweat loss and fluids consumed ($r = 0.79, P < .001$).

Conclusions: During preseason practices, the DII players drinking water at water breaks replaced the same volume of fluid (66% of weight lost) as NFL players with constant access to both water and sports drinks.

Keywords: [thermoregulation](#), [sodium loss](#), [dehydration](#), [hydration](#), [carbohydrate and electrolyte drinks](#)

Sandra Fowkes Godek, PhD, ATC, West Chester University, , Sports Med, 214 Sturtzebecker Health Sciences Center, West Chester, PA 19383, e-mail: sfowkesgod@wcupa.edu

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