Should You Drink Warm or Cold Water to Hydrate Best?

Hydration is of particular importance for everyone participating in exercise and/or work-related tasks. This is especially relevant in hot environments, where the body tends to store excess heat. Recently, researchers have considered whether the temperature of ingested water could play a factor in regulating the amount of heat stored and thereby alter core body temperature. The media has outlined that consuming hot water results in a lower amount of heat stored in the body compared to cold water due to an over-compensatory increase in sweating. This counterintuitive notion was based on a recent study, which suggested that hot water may help cool the body. However, recent findings show that ingesting hot or cold water does not influence body heat storage and thus core temperature regulation during exercise.

In the study performed by Dallon Lamarche & Glen P. Kenny , 10 males (19-32 years) cycled for 75 minutes at normal room temperature (25°C) at 50 percent of their maximal oxygen uptake. The exercise was performed in the Snellen whole-body direct calorimeter, which is a device that precisely measures the amount of heat lost over time (through sweat evaporation and dry heat exchange). During exercise, participants consumed either hot (50°C) or cold (1.5°C) water every 15 minutes. Researchers observed a continuous separation in whole-body sweating such that sweating was higher with hot relative to cold water ingestion. However, this difference in sweating was proportionate to the difference in heat content of the ingested water between the temperature conditions, resulting in similar changes in body heat storage. Therefore, it was shown that, during moderate prolonged exercise, the human body adjusts the sweating response to compensate for the heat content of the ingested water—no less and no more—such that heat balance is maintained.

The findings indicate that the temperature of ingested water does not have a direct influence on body temperature during exercise. However, one cannot ignore the different behavioral and psychological effects that water of different temperatures may have on maintaining adequate hydration. For instance, the palatability of cold water is shown to clearly be more favorable during prolonged exercise in comparison to hot water. When provided the option to drink cold water at will in one session and hot water in another, a group of investigators demonstrated several years ago that individuals will ingest much more cold water (by about 37 percent). This has important implications for the athlete and the worker because individuals are more inclined to drink cold water during physical activity, which leads to better maintenance of hydration and core body

temperature regulation. In addition, cold water ingestion has been shown to improve performance, as evidenced by extended time to exhaustion and lower perceived exertion in performance-based events when compared to ingesting hot water. On the other hand, drinking hot water during exercise is not pleasant, as anecdotally reported by the participants in our study, and consequently may hinder performance through behavioral and psychological modifications.

Ultimately, the message is clear: athletes and workers should consume water at cooler (or “more comfortable”) temperatures during physical tasks as opportunities allow. In the end, the consumption of water itself is the most important consideration for hydration status.

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Glen P. Kenny is a professor of exercise physiology at the University of Ottawa, holds a university research chair in environmental physiology and is a member of ACSM. His research has been directed at characterizing the physiological control mechanisms governing human temperature regulation during heat stress. An area of special focus in his work is the investigation of the physiological effects of heat stress in subpopulations with conditions rendering them particularly vulnerable to heat injury, such as aging, obesity and diabetes.

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