



Cold Water: Friend or Foe for the Human Body?

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Abstract

Water serves a crucial function in a variety of physiological processes, including maintaining hydration, supporting skin integrity, aiding in the excretion of waste through urination, and forming essential components of both saliva and blood. It not only supports the sensitive tissues in the body, aids digestion, and regulates body temperature and blood pressure, but also is essential for critically ill patients. Cold stimuli in the mouth are often pleasurable and satisfy thirst, with cold water being the preferred choice for hydration. This review analyzed English articles up to March 2025 on the effects of cold water on body organs. PubMed, Scopus, EMBASE, Cochrane Library, and Web of Science were searched using keywords related to cold water and ingestion, excluding immersion, sport, and exercise. Original research, reviews, and case reports were included, while non-English studies and out-of-range dates were excluded. "In press" articles and reference lists were also reviewed. Several lines of evidence indicate that cold water consumption has distinct effects on various parts of the body. These parts include metabolism, body temperature, cardiovascular system, gastrointestinal tract, respiratory system, nervous system, and urogenital system. This review article summarizes the physiological functions of water within various tissues and organs of the human body. Then, the potential pathophysiological effects of cold water on a variety of body organs and metabolic processes will be clarified.

Keywords: Cold water; Ice-cold water; Pathology; Physiology; Body organs


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Introduction

Like all living organisms, the human body relies heavily on water, which serves as a fundamental symbol of life [1]. Our bodies have adapted to the terrestrial environment to ensure we consume enough water for our daily activities [2]. Water plays a vital role in numerous physiological processes; thus, insufficient consumption can result in both acute and chronic health complications [3]. Water plays a crucial role in forming solutions, regulating surface tension, maintaining homeostasis of body temperature, acid-base balance, and osmolarity in medical applications [4].

Water plays a crucial role in hydrating the body, preserving skin health, facilitating the elimination of waste through urination, and constituting essential components of saliva and blood. It supports the delicate tissues of the brain and spinal cord, aids in digestion, and regulates body temperature and blood pressure [5]. Water is essential for the care of critically ill patients; however, recent evidence suggests that excessive fluid administration or use of non-physiological solutions may have adverse effects, particularly related to their electrolyte content [6,7].

Water temperature is another key characteristic that can be easily measured. Studies have explored its effects on human physiology [8]. Humans are thought to have evolved in tropical environments, where cold exposure can cause discomfort and physiological responses like shivering to maintain body temperature. In contrast, cold stimuli in the mouth are often enjoyable and associated with thirst satisfaction. Cold water is preferred for hydration, and cold foods, like ice cream, are also pleasurable, providing relief from thirst [9]. In a study by Clemens et al., it was demonstrated that cold water more significantly increased activity in the oral somatosensory cortex membrane potential compared to room temperature water or hot water [10]. Research indicates that consuming ice slurry before exercise can enhance submaximal running performance in hot conditions [11,12].

Pagophagia, the excessive intake of ice or iced drinks, is seen as a modern form of pica, particularly in the U.S. over the last thirty years. However, historical texts, including those by Hippocrates and Aristotle, warn of the dangers of consuming cold water [13]. Furthermore, Medical literature from the sixteenth century onward discusses the adverse effects of excessive cold water, ice, and snow intake, often relating to disordered eating [13]. People who chew ice or add it to drinks for cooling and refreshment do not consider it an abnormal behavior. However, excessive ice consumption can lead to serious health risks, including electrolyte imbalances and metabolic disorders [14]. It is crucial to assess the safety and physiological effects of water at different temperatures, particularly ice-cold water, on body homeostasis and function [15]. This re-

view article outlines the physiological roles of water in tissues and organs while summarizing research on the pathological effects of cold water on the human body.

Methods

The literature search for this narrative review was conducted by searching articles published from inception to March 2025. We aimed to identify relevant publications addressing cold water effects on the body. Only articles written in English were included.

We searched the following databases: PubMed, Scopus, EMBASE, the Cochrane Library, and Web of Science. The search strategy employed a combination of keywords and MeSH terms related to ("Ice-Cold-Water" OR "Drinking-water-temperature" OR "Water-temperature" OR "Temperature-of-Drinking-Water" OR "Ice-Water" OR "Cold-water") AND (ingestion OR drink) NOT (immersion OR sport OR exercise). The search strings were adapted for each database to account for variations in indexing and search functionalities.

We included original research articles, review articles, and case reports. We excluded studies not in English, studies outside the specified date range, and specific study designs. Both published and "in press" articles were considered to minimize publication bias. Additionally, we manually searched the reference lists of relevant articles to identify any further studies that may have been missed in the database searches.

Discussion

Physiological roles of water

Water comprises 60% of the human body; though, this percentage may fluctuate due to variables such as age, sex, and hydration status [3]. In order to understand the importance of water in the human body, it is imperative to elucidate its physiological functions within diverse tissues and organs.

Water provides an ideal environment for both intracellular and extracellular spaces, enabling cell survival and proper function [16]. Water is the most common reactant and product in the body's natural biochemical reactions, making it essential for cellular metabolic pathways [17]. Water molecules participate in various physiological reactions, including condensation, dehydration, and intramolecular dehydration reactions that generate water; hydrolysis reactions that consume water; catalysis that utilizes water; reactions producing protons, hydroxide, carbon dioxide, peroxide, etc.; water-splitting reactions, such as those in photosynthesis; and changes in metal coordination that release or absorb water [17].

The body's fluids, which are mainly water, contain various substances. This includes electrolytes like sodium and potassium, as well as metabolites such as

oxygen and glucose. Additionally, vital proteins like coagulation factors, immunoglobulins, and hormones are dissolved in our body's water [18].

The circulatory system helps regulate body temperature by distributing heat. Blood transports heat from tissues to the skin, where it can dissipate [15]. The circulatory system, body temperature, and water balance are crucial for homeostasis. The body adjusts temperature by exchanging heat with the environment. Drinking water at various temperatures aids in thermoregulation [15].

The effects of water on the brain and cognition are vital, as hydration affects mental performance. Dehydration harms attention, memory, and mood, with even mild dehydration disturbing mood in healthy adults [19,20]. Cognitive functions like reasoning and decision-making are vital for daily life and rely on proper hydration. Therefore, there is a need for sufficient water intake for cognitive performance and well-being. Research shows a strong connection between hydration and cognitive health, highlighting the importance of optimal water consumption for brain function [21]. The kidneys play a pivotal role in the regulation of water balance by a high-gain feedback mechanism that implicates the hypothalamus and neurohypophysis [22]. On the other hand, dehydration can significantly impair kidney function, as adequate water levels are essential for waste filtration and electrolyte balance. Insufficient hydration imposes extra pressure on the kidneys, potentially causing damage and reduc-

ing their filtration function [23,24].

Dehydration swiftly affects the liver, an organ essential for metabolic processes and detoxification. Proper hydration is crucial for the liver's ability to metabolize nutrients and eliminate toxins. Thus, maintaining optimal water balance is vital for liver function and overall homeostasis [25]. Any abnormality in the liver tissue also affects water balance in the body. For example, patients with liver cirrhosis, especially in the ascitic stage, develop disruptions in renal salt and water excretion. This process is thought to begin with hepatic venous outflow obstruction, resulting in increased portal and intrahepatic pressure [26].

Dehydration can lead to constipation and other gastrointestinal problems [27]. On the other hand, overhydration can cause many symptoms [28]. The development of edema in different parts of the body due to water retention in some organs leads to adverse effects on the body. Nausea and vomiting are other outcomes of overhydration [29].

Pathophysiological effects of cold water

Drinking ice-cold water is a common daily habit for many individuals [30]. Concerns about the safety of ice-cold water have arisen due to possible deleterious effects on body organs. In this section, the relevant studies will be reviewed to assess whether ice-cold water is beneficial or harmful to organ health. Figure 1 depicts different targets in the human body that may be affected by cold water ingestion.

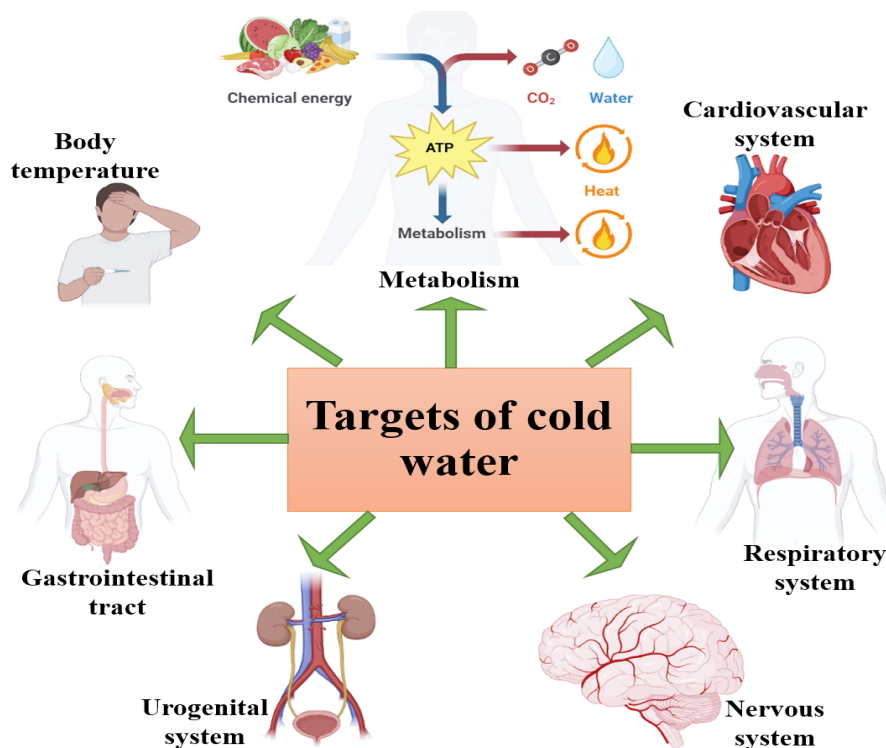


Figure 1. Different targets of cold water in the human body.

Metabolism

Clinical studies

There are conflicting studies regarding the effects of cold water on energy intake and body metabolism. Drinking cold water has been proposed as a weight loss strategy due to its potential to increase energy expenditure [31,32]. Additionally, cold water prompts the body to burn calories for the maintenance of a homeostatic internal body temperature [33] and to reduce energy intake by suppressing gastric motility [34]. However, Khil et al. reported that adults who consumed cold water exhibited higher body mass index (BMI) and waist circumference (WC) compared to those who drank room-temperature water. This finding suggests the potential adverse effects of cold water intake, such as impaired digestion, reduced blood flow due to muscle and blood vessel contraction, and diminished immune function [35]. A randomized, open-label, parallel-group trial using indirect calorimetry before and after cold exposure found metabolic rate adaptability in participants compared to non-selected individuals. It also indicated that cold exposure might impair immune resistance. These results underscore the interplay between temperature, metabolism, and immune function, calling for more research on cold exposure's effects on health [36].

Animal studies

Ragi, et al. showed that Sprague-Dawley rats consuming cold water (about 4°C) had higher lean body mass and lower body fat gain compared to those drinking room temperature water (about 22°C) [31]. Similar findings were observed in Wild-type Kunming mice that received intragastric ice water at 0 °C. According to a study by Wei, et al., these mice exhibited a significant reduction in body weight gain, gastric emptying rate, and pepsin activity [37].

Body temperature

Clinical studies

Drinking water at various temperatures helps the body regulate its temperature. A study by Miwa, et al. revealed that tympanic membrane temperature was significantly changed in healthy young men drinking cold water (3°C) and hot water (60°C) compared to room temperature water. Furthermore, they observed a significant decrease in skin blood flow, average sweat rate, and skin temperature when drinking cold water compared to room temperature water and hot water [15]. Exercising in heat can significantly elevate core body temperature, negatively affecting health and endurance. Increasing evidence indicates that consuming ice slurry is an effective and practical method to mitigate this rise and enhance endurance

performance [38]. Jonathan Dugas studied the effect of consuming an ice slurry versus cold water on prolonged submaximal exercise in heat and thermoregulatory responses. The ice slurry extended running time to exhaustion in hot, humid conditions, lowered rectal temperature during exercise, and permitted a higher rectal temperature before reaching exhaustion [39]. Lee et al. proposed that consuming a cold drink before and during exercise in the heat reduces physiological strain (heat accumulation) compared to drinking at 37 °C, resulting in improved endurance capacity [40].

Cardiovascular system

Clinical studies

The literature shows that drinking water induces changes in the cardiovascular system. These effects are considered to be triggered by gastric distension and osmotic factors, but little is known about the influence of water temperature [32]. Several research projects have evaluated this effect. For example, Arjunwadekar, et al. showed that acute ice water intake temporarily elevates sympathetic discharge, resulting in peripheral vasoconstriction. Healthy subjects exhibited an increased heart rate with stable blood pressure; while overweight and obese participants showed a decreased heart rate and elevated blood pressure [41]. Opposite results were shown in healthy subjects after drinking 250 mL of ice water compared to room temperature water. Those results showed that ice water ingestion can decrease heart rate through temperature stimulus-mediated vagal enhancement [30]. In a randomized crossover study by Girona and colleagues, it was indicated that ingestion of cold water (3°C) and room temperature water (22°C) reduced the workload to the heart through a reduction in heart rate and double product (Heart Rate × Systolic Blood Pressure), which could be mediated by an augmented cardiac vagal tone [32].

Drinking water has been proposed as a treatment for orthostatic hypotension due to its ability to increase blood pressure. Kubota et al. found that cold water significantly increased blood pressure by about 5-10 mmHg in both younger and older participants compared to room temperature water. The findings suggest that cold water could be effective as a first-line response to treat acute hypotension [42]. This finding relates to individuals with hypotension. Given the blood pressure-raising effect of cold water, it might pose risks for those with hypertension and healthy individuals [43].

In another study, Burke et al. reported a sudden death after a cold drink. They demonstrated that ingestion of cold liquids should be considered a potential trigger for fatal cardiac arrhythmias in patients with underlying heart disease [44]. Gelman and Pepine described a

patient with ischemic heart disease. This patient was a 31-year-old black male who developed a transient atrioventricular (AV) block and increased blood pressure and heart rate after drinking iced liquid [45]. In another case report, the patient experienced bradycardia and syncope only upon swallowing cold liquids [46]. Conversely, Kirchoff et al. suggested that it is not necessary to restrict ice water for patients with acute myocardial infarction (MI). However, significant electrocardiographic changes were observed in a few patients admitted to a coronary care unit with a diagnosis of acute MI after ingesting 200 or 400 mL of ice water [47]. Drinking cold or ice water may also affect peripheral blood circulation. Girona, et al. unraveled a significant decrease in skin blood flux shortly after drinking ice water in healthy subjects. The results indicated a reduced heat loss due to ingesting cold water (3°C) [32].

Gastrointestinal tract

Clinical studies

As previously described, cold water decreases gastric motility to suppress energy intake [34]. Several lines of evidence indicate that cold water may inhibit muscular contractions and gastrointestinal motility in various parts of the gastrointestinal tract. Ritschel and Erni discovered that the indigestible capsule discharges from the stomach to the duodenum significantly faster after consuming cold water (5°C) compared to room temperature (20-25°C) and heated water (45°C) [48]. In addition to the motility of the gastrointestinal tract, ingestion of a cold drink affects gastrointestinal temperature [49]. Many patients report an increase in abdominal pain/discomfort, bloating, and diarrhea following cold water intake [50]. Zuo et al. proved that cold water (4°C) consumption considerably decreased the perception thresholds in irritable bowel syndrome (IBS) patients and the defecation thresholds in diarrhea-predominant IBS patients in comparison to hot water (37°C) [50]. The data from a cross-sectional study showed that symptomatology following cold water intake may be associated with increased plasma 5-hydroxytryptamine concentrations in diarrhea-predominant IBS patients [51].

Cold water affects not only the stomach and colon, but also esophageal motility. A study found that cold water slows esophageal peristalsis and prolongs lower esophageal sphincter relaxation; whereas hot water increases motility and enhances wave propagation, but neither temperature significantly influences the rapid passage through the esophagus [52]. Choi et al. supported these findings by studying esophageal motility in healthy subjects, revealing that cold water (2°C) prolonged contractions and reduced contractile front velocity compared to room temperature (25°C) and

hot water (45°C). They hypothesized that cold water may induce pain in patients with esophageal motility disorders [53]. A study found similar results regarding the effect of hot water on spasms, pain, and technical difficulties during colonoscopy compared to cold water [54]. Aggarwal et al. found that sucking on ice chips for 30 minutes activates cold-sensitive receptors in the oropharynx, significantly inhibiting vasopressin secretion, independent of osmotic or gastric effects. This may explain why patients with severe dehydration, including those with diabetes insipidus, prefer cold liquids to relieve their thirst [55].

Animal studies

A study by Yang et al. revealed that cold water (0-4°C) gavage in healthy rats inhibited colonic motility partially through oxytocin-oxytocin receptor signaling in the myenteric nervous system pathway. They also uncovered that the inhibitory effect of oxytocin on muscle contractility due to cold water consumption was more significant than that of temperature water [56]. A recent experimental study conducted by Keshavarz et al. demonstrated that rats consuming ice-cold water for three months suffered liver damage, including micro-vesicle formation and increased Kupffer cells, alongside elevated triglycerides and alkaline phosphatase levels [57].

Respiratory system

Clinical studies

Several studies have explored the hypothesis that cold water ingestion may impair lung function. A randomized controlled crossover trial conducted by Turner and Tiller demonstrated that consuming 1000 mL of cold water (2°C) significantly decreased forced vital capacity (FVC) and forced expiratory volume (FEV1). In contrast, room temperature water (18°C) did not affect lung function [58]. Tiller et al. highlighted that cold water reduces exhaled-breath temperature (EBT) below baseline. Therefore, decreased lung function following cold water ingestion could be explained by changes in EBT [59]. Researchers have also investigated the effect of cold water on lung function in asthma patients. Lin and Hsieh found a significant decrease in mean FEV1 after cold water consumption in the asthmatic group. They concluded that ingestion of cold water (0-4°C) compared to warm water (25°C) induced or exacerbated asthma in asthmatic children [60]. In the other study, the effects of cold water on nasal mucus velocity and nasal airflow resistance have also been examined. The findings indicated that consuming cold fluids temporarily reduced nasal mucus velocity. This suggests that hot liquids may be more beneficial than cold liquids in the management of upper respiratory tract infections [61]. Further investiga-

tion is needed into the physiological responses to cold water to understand their implications for respiratory health.

Nervous system

Clinical studies

Previous studies have examined headaches caused by the ingestion or inhalation of cold stimuli (HICS). Cold substances, like ice water, frequently trigger headaches, especially in individuals with active migraines, who may be more sensitive to forehead pain from cold stimuli in the palate [62]. The ice-water stimulus provokes HICS significantly more frequently than the ice-cube stimulus [63].

Animal studies

Wei et al. investigated the impact of drinking water at varying temperatures on cognitive performance and the progression of Alzheimer's disease using a mouse model. The study found that mice consuming intragastric ice water (0°C) exhibited notable cognitive impairments and an increased energy charge in the cortex compared to those receiving water at room temperature (25°C). Over 35 days, cognitive function declined significantly, correlating with decreased expression of phosphoinositide 3-kinases (PI3Ks) and protein kinase B (Akt), alterations in the glutamate/GABA ratio, and neuropathy characterized by significant amyloid lesions in the cortex and hippocampus. These findings indicate that drinking ice-cold beverages may disrupt insulin-mediated neuroenergetics, which is vital for neuronal health. Impaired insulin signaling could contribute to cognitive decline and neuropathy, potentially worsening Alzheimer's disease. Investigating the connection between cold water intake, insulin signaling, and cognitive function is crucial for managing neurodegenerative diseases [37].

Urogenital system

Clinical studies

Cold exposures can substantially disrupt blood circulation in the urogenital organs, resulting in conditions such as dysmenorrhea and infertility. A study involving Asian and White women found that frequent consumption of cold water, cold drinks, and ice cream was associated with an increased incidence of dysmenorrhea [64].

Animal studies

The results of an animal study revealed that long-term (3 months) consumption of ice-cold water (4°C) in rats led to a reduction in sperm count and progressive motility, an increase in the percentage of non-motile sperm, and alterations in normal sperm morphology.

Additionally, this exposure caused damage to Sertoli and Leydig cells [65]. The literature indicates a significant gap in studies on the effects of cold water on the urogenital system. Table 1 summarizes the different effects of cold water on a variety of targets in the body.

Persian medicine literature

In the context of traditional Persian medicine (TPM), the teachings of Avicenna—particularly those presented in the *Canon of Medicine*—are regarded by some scholars as pivotal for understanding historical conceptualizations of health and hydration [57]. Drawing on a broad spectrum of classical PM texts, including Avicenna's *Canon* and other authoritative works such as *Al-Mansouri fi Al-Tibb*, *Khulasat al-Hikmah*, *Zakhireh Kharazmshahi*, and *Exir-e A'zam*, iced water (*Shadid al-Bard*) is generally considered to diminish the body's innate heat and weaken the nervous system. It is described as a cause of cold congestion (attributed to reduced blood circulation), cold-induced headaches, and is particularly implicated in weakness and dysfunction of the brain, heart, lungs, and internal organs such as the liver, gastrointestinal tract, and genitourinary system. Excessive or untimely consumption may also lead to general debilitation, muscular relaxation, tremors, and increased susceptibility to allergies and sinusitis (*Nazleh*) [66-70]. Notably, these perspectives align with cautions found in Hippocratic and Aristotelian traditions, which similarly highlight potential health risks associated with excessive intake of cold or iced water [13]. Moreover, a critical review suggests that many of the harms attributed to ice-cold water in TPM sources have also been substantiated by recent scientific studies.

Conversely, these TPM sources suggest that cold water—as distinguished from iced water—may be beneficial for individuals with a hot temperament, enhancing digestion and increasing appetite. This nuanced viewpoint emphasizes that the effects of water temperature on health are believed to vary according to an individual's constitution and overall health status, underscoring the importance of personalized recommendations within traditional medical frameworks [66-70].

Therefore, incorporating these historical insights enriches contemporary discussions by illuminating long-standing cultural concerns about iced water consumption and highlights the value of considering both historical context and individual variation when evaluating the potential health effects of water temperature.

Limitations

This review has several limitations that should be considered when interpreting its findings. To begin

Table 1. Pathophysiological effects of cold water

Potential targets	Major negative effects	Mechanism
Metabolism	1- Increased body mass index (BMI) and waist circumference. 2- Decreased immune function and impaired immune resistance.	1- Impairing digestion and reducing blood flow due to muscle and blood vessel contraction [36]. 2- Impairing metabolic rate adaptability [37].
Body temperature	1- Decreased average sweat rate, and skin temperature.	1- Decreasing skin blood flow [15].
Cardiovascular system	1- Increased heart rate in healthy subjects. 2- Decreased heart rate and elevated blood pressure in overweight and obese participants. 3- Fatal cardiac arrhythmias in patients with underlying heart disease. 4- Transient atrioventricular block and increased blood pressure and heart rate in an ischemic patient. 5- Bradycardia and syncope. 6- Electrocardiographic changes in acute myocardial infarction (MI).	1- Mediating temperature stimulus-induced vagal enhancement [30, 41]. 2- Elevating sympathetic discharge, resulting in peripheral vasoconstriction [41]. 3- Not mentioned (Sudden death case report) [44]. 4- Not mentioned (case report) [45]. 5- Not mentioned (case report) [46]. 6- Not mentioned (patients admitted to a coronary care unit with acute MI) [47].
Gastrointestinal tract	1- Decreased gastric motility. 2- Increased abdominal pain/discomfort, bloating, and diarrhea and decreased perception and defecation thresholds in diarrhea-predominant irritable bowel syndrome (IBS) patients. 3- Induced pain in patients with esophageal motility disorders. 4- Liver damage and elevated triglycerides and alkaline phosphatase levels.	1- Inhibiting muscular contractions via oxytocin-oxytocin receptor signaling [34]. 2- Increasing plasma 5-hydroxytryptamine concentrations [51, 52]. 3- Decreasing esophageal peristalsis and increasing lower esophageal sphincter relaxation [53, 54]. 4- Promoting micro-vesicle formation and increasing Kupffer cells [57].
Respiratory system	1- Decreased forced vital capacity (FVC) and forced expiratory volume (FEV1) [58]. 2- Induced or exacerbated asthma in asthmatic children [60]. 3- Decreased nasal mucus velocity [61].	1- Decreasing exhaled-breath temperature [59]. 2- Not mentioned. 3- Not mentioned.
Nervous system	1- Induced headache [62, 63]. 2- Impaired cognitive function and increased energy charge in the cortex. 3- Neuropathy.	1- Not mentioned. 2- Decreasing expression of phosphoinositide 3-kinases (PI3Ks) and protein kinase B (Akt), and altering in the glutamate/GABA ratio [35]. 3- Disrupting insulin-mediated neuroenergetics and promoting amyloid lesions in cortex and hippocampus [35].
Urogenital system	1- Increased incidence of dysmenorrhea. 2- Decreased sperm count motility, increased percentage of non-motile sperm, alterations in normal sperm morphology, and damage to Sertoli and Leydig cells [65].	1- Disrupting blood circulation in urogenital organs [64]. 2- Not mentioned.
Metabolism	1- Decreased body fat and weight gain. 2- Reduced energy intake.	Increasing energy expenditure [31,32]. Suppressing gastric motility [34].
Body temperature	1- Maintained the homeostatic internal body temperature. 2- Enhanced endurance during exercise.	1- Prompting calorie burning [33]. 2- Decreasing core body temperature and reducing physiological strain (heat accumulation) [38, 39, 40].
Cardiovascular system	1- Stable blood pressure in healthy subjects. 2- Reduced the workload to the heart. 3- Increased blood pressure in hypotensive patients [42].	1- Elevating sympathetic discharge resulting in peripheral vasoconstriction [41]. 2- Augmenting cardiac vagal tone and reducing in heart rate and double product [32]. 3- Not mentioned.
Gastrointestinal tract	1- Relieved thirst in diabetes insipidus.	1- Decreasing vasopressin secretion in the oropharynx [56].

with, many cited studies rely on animal models, and due to physiological and genetic differences between species, extrapolating these results to humans must be approached with caution. Furthermore, the inclusion of rare case reports, while valuable for highlighting unusual clinical phenomena, limits generalizability and cannot establish causation. In addition, some associations reported in observational studies may reflect correlation rather than causation, as confounding factors or coincidental relationships could influence findings. Consequently, these limitations emphasize the need for careful interpretation and further rigorous human research to validate the effects of ice-cold water on the human body. Moreover, drinking water intake encompasses multiple dimensions, including age, occupational status, athletic activity, and timing of consumption; however, this review has focused exclusively on the temperature of drinking water. These additional factors warrant further investigation and systematic or narrative review in future studies.

Another limitation of this review is the absence of standardized definitions for the terms 'ice-cold water' and 'cold water' in the existing literature, which has resulted in their interchangeable use and potential ambiguity. Although these terms are crucial for precise interpretation, studies vary widely in the temperature ranges they assign to categories such as cold water, ice-cold water, room temperature water, and hot water. Generally, ice-cold water is agreed to be at or near 0°C; however, only a single study explicitly applied this definition. Cold water temperatures most commonly range between 2°C and 4°C, with some sources including 0°C to 4°C, and a single study 5°C within this category. Room temperature water is typically defined as being between 18°C and 25°C; while hot water ranges from approximately 37°C to 60°C. Notably, an "ice-cold" water designation was specifically used in only two studies, where a temperature of 4°C was classified as ice-cold water, differing from the classification in other studies. This variability underscores the need for standardized terminology in future research to enhance comparability and clarity.

Conclusions

Many people drink cold water daily, yet its effects on the human body's health are debated. Studies show mixed results on metabolism and weight loss; some suggest benefits like increased energy expenditure; while others link it to higher BMI. Cold exposure may weaken immunity and impact the cardiovascular system, causing elevated heart rate and blood pressure, particularly in those overweight or with heart issues, and potentially triggering fatal arrhythmias. It can also decrease or augment gastric motility, cause abdominal discomfort, slow esophageal function, complicate lung function, and worsen asthma. Furthermore, it may be connected to headaches, cognitive issues, and reproductive problems. While research suggests potential negative impacts, definitive conclu-

sions on cold water's harm are premature. Caution and self-monitoring are advised to prevent adverse effects.

Conflict of Interests

No potential conflict of interest was reported by the author(s).

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