

OVERCOMING NAUSEA AND DIZZINESS DURING EXERCISE: PRACTICAL GUIDANCE

Author's Name: Acsah Regulas¹

Affiliation:

1. Lecture, Suyog College of Nursing, Mysore, Karnataka, India.

Corresponding Author Name and Email ID: Acsah Regulas,

Acsahregulas1234@gmail.com

ABSTRACT

Exercise-induced nausea and dizziness can hinder individuals' ability to engage in physical activity effectively. This abstract provides an overview of practical guidance for overcoming these symptoms during exercise. Drawing from recent research, including studies published in the Journal of Science and Medicine in Sport and Medicine & Science in Sports & Exercise, this abstract outlines key factors contributing to exercise-related nausea and dizziness, such as dehydration and inadequate nutrient intake. The abstract also highlights strategies to mitigate these symptoms, including proper hydration, balanced pre-exercise nutrition, and gradual warm-up routines. By implementing these recommendations, individuals can optimize their exercise experience, minimize discomfort, and enhance overall well-being.

Keywords: Nausea, Dizziness, Exercise.

INTRODUCTION

Engaging in physical exercise is crucial for maintaining overall health and well-being. However, for some individuals, the experience of nausea and dizziness during exercise can be discouraging and disruptive. Understanding the underlying causes of these symptoms is essential for effectively managing them and ensuring a more enjoyable and productive workout routine.

Research has shown that exercise-induced nausea and dizziness can stem from various factors, including dehydration, low blood sugar levels, inadequate warm-up, and even intense physical exertion. According to a study published in the *Journal of Science and Medicine in Sport*, dehydration, in particular, has been identified as a common trigger for exercise-related nausea and dizziness.¹ Additionally, insufficient nutrient intake before exercise, such as carbohydrates, can contribute to feelings of lightheadedness and discomfort.²

In this guide, we will delve into practical strategies and recommendations to help individuals overcome nausea and dizziness during exercise. By implementing these suggestions, individuals can enhance their exercise experience, minimize discomfort, and maximize the benefits of physical activity.

DEFINITION OF EXERCISE-INDUCED NAUSEA:

Exercise-induced nausea refers to the sensation of queasiness or discomfort in the stomach that occurs during or immediately after physical activity. It is often accompanied by feelings of unease and may lead to vomiting in severe cases.³

INCIDENCE

The incidence of exercise-induced nausea and dizziness can vary depending on various factors such as individual fitness levels, exercise intensity, environmental conditions, and hydration status. While precise statistics on the incidence rate may be challenging to ascertain due to underreporting and individual variability, studies have indicated that a significant portion of individuals experience these symptoms during or after physical activity.

According to research published in the *Journal of Science and Medicine in Sport*, exercise-induced gastrointestinal symptoms, including nausea, are reported by approximately 20-50% of athletes during endurance events.⁴ Similarly, a study in the *British Journal of Sports Medicine* found that dizziness and lightheadedness were commonly reported symptoms among individuals engaging in high-intensity exercise, particularly in hot and humid conditions.⁵

While these studies provide insights into the prevalence of exercise-induced nausea and dizziness, further research is needed to better understand the specific incidence rates across different populations and exercise scenarios.

CLASSIFICATION OF EXERCISE-INDUCED NAUSEA AND DIZZINESS:

1. Primary Causes:

- Dehydration: Inadequate fluid intake before, during, or after exercise can lead to dehydration, contributing to symptoms of nausea and dizziness.
- Low Blood Sugar Levels: Insufficient carbohydrate intake or prolonged exercise without replenishing glycogen stores can result in hypoglycemia, leading to feelings of lightheadedness and nausea.
- Intense Physical Exertion: Engaging in high-intensity exercise beyond one's fitness level can strain the body, potentially causing nausea and dizziness.

2. Secondary Causes:

- Environmental Factors: Exercising in hot and humid conditions can increase the risk of dehydration and heat-related illnesses, exacerbating symptoms of nausea and dizziness.
- Poor Pre-Exercise Nutrition: Consuming heavy or fatty meals before exercise can delay gastric emptying and increase the likelihood of gastrointestinal discomfort during physical activity.
- Underlying Medical Conditions: Certain medical conditions such as migraines, vertigo, or gastrointestinal disorders may predispose individuals to experience nausea and dizziness during exercise.

3. Transient Factors:

- Lack of Warm-Up: Skipping a proper warm-up routine before exercise can result in abrupt changes in heart rate and blood pressure, potentially leading to dizziness.
- Overexertion: Exceeding one's physical limits or pushing too hard during exercise without adequate rest can strain the body and induce symptoms of nausea and dizziness.

4. Individual Variability:

- Fitness Level: Individuals with lower fitness levels or those new to exercise may experience exercise-induced nausea and dizziness more frequently as their bodies adapt to physical activity.
- Hydration Status: Variations in hydration status, electrolyte balance, and individual sweat rates can influence susceptibility to exercise-related nausea and dizziness.^{6,7}

Understanding the classification of these symptoms can help individuals identify potential triggers and implement targeted strategies to prevent or mitigate their occurrence during exercise.

ETIOLOGICAL FACTORS

1. **Dehydration:** Inadequate fluid intake before, during, or after exercise can lead to dehydration, reducing blood volume and compromising circulation, thereby contributing to feelings of dizziness and nausea.
2. **Electrolyte Imbalance:** Loss of electrolytes, such as sodium, potassium, and magnesium, through sweat during exercise without adequate replenishment can disrupt nerve and muscle function, potentially causing dizziness and gastrointestinal discomfort.
3. **Hypoglycemia:** Insufficient carbohydrate intake or prolonged exercise without refuelling can deplete glycogen stores, leading to low blood sugar levels, which may manifest as dizziness, weakness, and nausea.
4. **Environmental Conditions:** Exercising in hot and humid environments can increase sweat rates and fluid loss, exacerbating dehydration and heat-related symptoms like dizziness and nausea.²
5. **Intense Physical Exertion:** Engaging in high-intensity exercise beyond one's fitness level or pushing through fatigue can strain the body, leading to symptoms of nausea and dizziness.
6. **Gastrointestinal Distress:** Strenuous exercise can divert blood flow away from the digestive system, causing gastrointestinal discomfort, nausea, and even vomiting.
7. **Vasovagal Response:** Sudden changes in blood pressure and heart rate, such as those induced by intense exercise or standing up abruptly, can trigger a vasovagal response, resulting in dizziness and nausea.

8. Medication Side Effects: Certain medications, such as those for blood pressure regulation or pain management, may have side effects that include dizziness or gastrointestinal disturbances, particularly when combined with exercise.

9. Underlying Medical Conditions: Individuals with pre-existing conditions such as migraines, vertigo, vestibular disorders, or gastrointestinal issues may be more susceptible to experiencing exercise-induced nausea and dizziness.

Identifying and addressing these etiological factors can help individuals manage and prevent exercise-related symptoms, allowing for safer and more enjoyable physical activity experiences.⁹

RISK FACTORS

1. Dehydration
2. Poor Hydration Habits
3. High Intensity Exercise
4. Environmental Conditions
5. Inadequate Pre-Exercise Nutrition
6. Medication Use
7. Previous History
8. Lack of Warm-Up
9. Overexertion
10. Individual Physiology

PATHOPHYSIOLOGY

1. Dehydration:

- Inadequate fluid intake before, during, or after exercise leads to dehydration, reducing blood volume and compromising circulation.
- Reduced blood flow to the brain can impair cerebral perfusion, resulting in dizziness and lightheadedness.
- Dehydration-induced electrolyte imbalances, such as decreased sodium levels, can disrupt nerve signalling and exacerbate symptoms.

2. Electrolyte Imbalance:

- Loss of electrolytes through sweat during exercise, without sufficient replenishment, disrupts nerve and muscle function.
- Sodium depletion, in particular, affects cellular osmolarity and can impair neuromuscular coordination, contributing to dizziness and gastrointestinal discomfort.

3. Hypoglycemia:

Inadequate carbohydrate intake or glycogen depletion during prolonged exercise leads to low blood sugar levels.

- Hypoglycemia impairs brain function, causing symptoms such as dizziness, weakness, and nausea.

4. Environmental Conditions:

- Exercising in hot and humid environments increases sweat rates and fluid loss, predisposing individuals to dehydration and heat-related symptoms.
- Elevated core body temperature can impair thermoregulation and cardiovascular function, exacerbating symptoms of dizziness and nausea.⁸

5. Intense Physical Exertion:

- High-intensity exercise beyond one's fitness level or prolonged exertion can strain the cardiovascular system, leading to reduced cardiac output and inadequate tissue perfusion.
- Ischemia and reduced oxygen delivery to the brain can trigger symptoms of dizziness and nausea.

6. Gastrointestinal Distress:

- Strenuous exercise diverts blood flow away from the digestive system, causing ischemia and gastrointestinal discomfort.
- Reduced gastric emptying and increased visceral sensitivity contribute to symptoms of nausea and even vomiting.

7. Vasovagal Response:

- Sudden changes in blood pressure and heart rate, such as those induced by intense exercise or orthostatic stress, activate the autonomic nervous system.

- Dysregulation of autonomic reflexes can lead to vasovagal syncope, characterized by dizziness, nausea, and transient loss of consciousness.

Understanding the pathophysiological mechanisms underlying exercise-induced nausea and dizziness informs preventive strategies and targeted interventions to optimize exercise performance and safety.⁹

CLINICAL MANIFESTATIONS

1. Nausea:

- Sensation of queasiness or discomfort in the stomach during or after exercise.
- May be accompanied by an urge to vomit or actual vomiting in severe cases.
- Can vary in intensity from mild discomfort to debilitating nausea.

2. Dizziness:

Feeling lightheaded, dizzy, or unsteady during or after physical activity.

- Sensation of spinning (vertigo) or feeling faint.
- May be accompanied by visual disturbances, such as blurred vision or black spots.

3. Weakness and Fatigue:

- Generalized weakness or fatigue that may accompany nausea and dizziness.
- Reduced energy levels and decreased ability to perform physical tasks.
- Muscle fatigue and weakness, particularly during high-intensity exercise.⁷

4. Palpitations and Chest Discomfort:

- Awareness of rapid or irregular heartbeat (palpitations).
- Chest discomfort or tightness, which may mimic symptoms of cardiovascular issues.
- Increased heart rate and perceived effort during exercise.

5. Gastrointestinal Symptoms:

- Abdominal discomfort or cramping during physical activity.
- Bloating, flatulence, or diarrhea, especially in cases of gastrointestinal distress.
- Changes in bowel habits or urgency to defecate.

6. Sweating and Clamminess:

- Excessive sweating, particularly in hot and humid conditions.
- Clammy skin and feeling overheated despite sweating.
- Signs of dehydration, such as dry mouth or decreased urine output.

7. Loss of Balance and Coordination:

- Feeling unsteady on one's feet or experiencing loss of balance.
- Impaired coordination and difficulty maintaining proper posture.
- Risk of falls or accidents, particularly during activities requiring balance.

8. Mental Fog and Confusion:

- Difficulty concentrating or focusing on tasks.
- Mental fog or confusion, especially during prolonged or intense exercise.
- Impaired decision-making and judgment.

COMPLICATIONS

1. Dehydration-related Complications:

- Severe dehydration can lead to electrolyte imbalances, heat exhaustion, or heatstroke, posing serious health risks.
- Prolonged dehydration may impair kidney function and increase the risk of renal complications.

2. Heat-related Illnesses:

- Failure to address symptoms of dizziness and nausea in hot and humid environments can progress to heat exhaustion or heatstroke, which are medical emergencies requiring immediate intervention.
- Heatstroke can cause organ damage, central nervous system dysfunction, and even death if not treated promptly.

3. Injuries:

- Dizziness and impaired balance increase the risk of falls, particularly during activities requiring coordination, such as running or cycling.
- Falls and accidents during exercise can result in musculoskeletal injuries, fractures, or head trauma.

4. Exacerbation of Underlying Medical Conditions:

- Individuals with pre-existing medical conditions such as cardiovascular disease, migraines, or gastrointestinal disorders may experience worsening symptoms during exercise-induced nausea and dizziness.
- Excessive exertion or dehydration can exacerbate underlying conditions and lead to complications.

5. Impaired Performance and Productivity:

- Persistent symptoms of nausea and dizziness can hinder exercise performance and limit individuals' ability to engage in physical activity.
- Reduced productivity at work or in daily activities may occur due to the impact of exercise related symptoms on overall well-being.

6. Psychological Effects:

- Chronic or recurrent episodes of exercise-induced nausea and dizziness may lead to anxiety or fear of exercise, resulting in avoidance of physical activity.
- Negative psychological effects, such as decreased motivation or self-confidence, can affect individuals' overall mental health and quality of life.

7. Social Implications:

- Limitations in participating in social or recreational activities due to exercise-related symptoms can impact interpersonal relationships and social interactions.
- Feelings of isolation or frustration may arise from the inability to engage in physical activities with friends or family.^{7,10}

DIAGNOSTIC EVALUATION

1. Clinical History and Physical Examination:

- A thorough history-taking to identify the timing, duration, and triggers of symptoms. Physical examination to assess vital signs, hydration status, cardiovascular function, and neurological function.

2. Laboratory Tests:

- Blood tests to evaluate electrolyte levels, glucose levels, and markers of dehydration or

metabolic abnormalities.

- Urinalysis to assess hydration status and kidney function.

3. Electrocardiogram (ECG):

- Electrocardiography to assess cardiac function and rule out underlying cardiac abnormalities that may contribute to symptoms of dizziness and nausea.

4. Orthostatic Vital Signs:

- Measurement of blood pressure and heart rate in different positions (e.g., lying, sitting, standing) to assess for orthostatic hypotension, a common cause of dizziness during exercise.

5. Exercise Stress Testing:

- Treadmill or bicycle exercise stress testing to evaluate cardiovascular function and assess for exercise-induced symptoms such as dizziness or chest discomfort.

6. Imaging Studies:

- In some cases, imaging studies such as magnetic resonance imaging (MRI) or computed tomography (CT) scans may be indicated to rule out structural abnormalities or intracranial pathology contributing to symptoms.

7. Electroencephalogram (EEG):

- EEG may be performed to evaluate for seizure activity or abnormal brain wave patterns in individuals experiencing exercise-induced symptoms such as dizziness or altered consciousness.

8. Gastrointestinal Evaluation:

- Endoscopic evaluation or imaging studies such as ultrasound or computed tomography may be considered to assess for gastrointestinal disorders or structural abnormalities in individuals with exercise-induced gastrointestinal symptoms.

9. Neurological Evaluation:

- Neurological examination may be warranted to assess for vestibular dysfunction, migraine, or other neurological conditions contributing to symptoms of dizziness and nausea.

10. Specialized Testing:

- Depending on the clinical presentation and suspected underlying etiology, additional specialized tests such as tilt-table testing, vestibular function testing, or metabolic testing may be considered. 11,12

MEDICAL MANAGEMENT

1. Hydration:

- Encourage adequate fluid intake before, during, and after exercise to prevent dehydration and maintain electrolyte balance.
- Emphasize the importance of hydrating with water or electrolyte-rich beverages, especially during prolonged or intense physical activity.

2. Nutritional Support:

- Recommend consuming carbohydrate-rich foods or beverages before exercise to maintain blood sugar levels and prevent hypoglycemia.
- Advise against heavy or fatty meals shortly before exercise, as these may delay gastric emptying and exacerbate gastrointestinal symptoms.

3. Electrolyte Replacement:

- For individuals prone to electrolyte imbalances, consider supplementation with electrolyte tablets, sports drinks, or electrolyte-rich foods to replenish sodium, potassium, and magnesium lost through sweat.

4. Medication Adjustment:

- Review the individual's medication regimen and consider adjusting medications that may exacerbate exercise-induced symptoms, such as those with cardiovascular or gastrointestinal side effects.
- Consult with a healthcare provider before making any changes to medication.

5. Gradual Progression:

- Encourage a gradual progression of exercise intensity and duration to allow the body to adapt and minimize the risk of overexertion and associated symptoms.
- Emphasize the importance of listening to the body's signals and taking breaks as needed during exercise.

6. Cooling Strategies:

- In hot and humid environments, advise using cooling strategies such as seeking shade, wearing lightweight and breathable clothing, and using fans or misting devices to prevent overheating and dehydration.^{13,14}

7. Vestibular Rehabilitation:

- For individuals with vestibular dysfunction contributing to exercise-induced dizziness, consider referral to a physical therapist for vestibular rehabilitation exercises to improve balance and reduce symptoms.

8. Stress Management:

- Explore stress management techniques such as mindfulness, relaxation exercises, or deep breathing techniques to reduce anxiety and tension associated with exercise-induced symptoms.

9. Medical Consultation:

- Refer individuals with recurrent or severe exercise-induced symptoms to a healthcare provider for further evaluation and management, particularly if symptoms persist despite conservative measures.

10. Individualized Approach:

- Tailor medical management strategies to the individual's specific needs, considering factors such as underlying medical conditions, exercise habits, and environmental factors.¹³

NURSING MANAGEMENT

1. Assessment:

- Conduct a comprehensive assessment of the individual's medical history, exercise habits, hydration status, and current symptoms.
- Monitor vital signs, including blood pressure, heart rate, and temperature, to assess for signs of dehydration or cardiovascular compromise.

2. Education:

- Provide education on the importance of proper hydration before, during, and after exercise to prevent dehydration and associated symptoms.

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- Educate individuals on recognizing warning signs of dehydration, heat exhaustion, and heatstroke, and advise on appropriate actions to take if symptoms occur.

3. Hydration Management:

- Encourage individuals to drink adequate fluids, such as water or electrolyte-rich beverages, before and during exercise to maintain hydration.
- Monitor fluid intake and output, and guide recognizing signs of dehydration, such as dark urine or thirst.

4. Nutritional Support:

- Offer guidance on pre-exercise nutrition, emphasizing the importance of consuming carbohydrates for sustained energy and avoiding heavy or fatty meals that may exacerbate gastrointestinal symptoms.
- Collaborate with dietitians to develop individualized nutrition plans for individuals with specific dietary needs or restrictions.15

3. Gradual Progression:

- Gradually increase exercise intensity and duration over time to allow the body to adapt and minimize the risk of overexertion.
- Incorporate rest days into your exercise routine to allow for recovery and prevent cumulative fatigue.13

4. Environmental Considerations:

- Avoid exercising in extreme heat or humidity, particularly during peak hours of the day. Choose cooler times of the day or exercise indoors in air-conditioned environments when possible.
- Wear lightweight, breathable clothing and protective gear to minimize heat retention and promote sweat evaporation.

5. Cooling Strategies:

- Use cooling strategies such as misting fans, cold towels, or ice packs during breaks in exercise to lower body temperature and prevent overheating.
- Take frequent breaks in shaded areas or air-conditioned spaces to rest and cool down during outdoor activities.

6. Proper Warm-Up and Cool-Down:

- Perform a dynamic warm-up routine before exercise to prepare the body for activity and reduce the risk of injury.
- Incorporate a gradual cool-down phase at the end of exercise to lower heart rate and prevent post-exercise dizziness.

7. Monitor Symptoms:

- Pay attention to early warning signs of dehydration, heat exhaustion, or overexertion, such as thirst, fatigue, dizziness, or nausea.
- Stop exercising and seek shade or a cooler environment if symptoms occur, and rehydrate with fluids and electrolytes as needed.

8. Individualized Approach:

- Tailor prevention strategies to your individual needs, taking into account factors such as age, fitness level, medical history, and environmental conditions.
- Consult with a healthcare provider or exercise specialist for personalized guidance and recommendations.⁷

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