

# ‘Work at Height’: Managing Medical Evaluation

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**Abstract:** *Prior to engaging in a 'Work at Height' activity in an industrial setting, it is essential to ensure that workers are medically fit. The physical and mental demands of such tasks may place workers at risk of injury or illness, and a comprehensive medical evaluation can assist in identifying and addressing any underlying health conditions or risk factors. However, in certain developing countries, medical fitness assessments for 'Work at Height' have not been standardized, leading to a false sense of assurance. For example, non-standardized tests, such as requiring workers to walk on narrow beams at a height of five meters and measuring their blood pressure and pulse rate before and after the elevated walk, are specified as a 'Vertigo Test' to determine eligibility for 'Work at Height.' There is a need to clarify the physiological effects of 'Work at Height,' vertigo, medical assessments, and tests required to evaluate vertigo in the context of 'Work at Height.'*

**Keywords:** Work at Height, Acrophobia, Altophobia, Vertigo, Vertigo Test, Medical Fitness

## 1) Difference between Acrophobia and Altophobia

Acrophobia and altophobia are both types of phobias related to heights, but they differ in their specific focus and symptoms. Acrophobia is a fear of heights and is characterized by an excessive and persistent fear of heights or high places, even when there is no real danger. It is a type of specific phobia and can cause symptoms such as panic attacks, sweating, trembling, and avoidance of heights. People with acrophobia may experience fear in a variety of high places, such as tall buildings, bridges, or cliffs. Altophobia, on the other hand, is a fear of heights specifically related to being in high places or near steep drops. It is a type of situational phobia and can cause symptoms such as dizziness, trembling, sweating, and avoidance of situations that involve being in high places. People with altophobia may experience fear in situations such as standing on a balcony or climbing a ladder.

## 2) Fitness for ‘Work at Height’ - Regulatory requirements

In many countries, regulations and guidelines are in place to require employers to ensure that workers are medically fit for the specific job tasks they will be performing, including ‘Work at Height’. These regulations may specify the type of medical evaluation required, such as a pre-employment medical examination, periodic medical check-ups, or evaluations following an injury or illness.

In the United States, OSHA Standard 1910.28(a) requires employers to ensure that each walking-working surface can support the maximum intended load and that workers on such surfaces are protected from fall hazards. OSHA Standard 1910.28(b) further requires employers to evaluate the workplace to determine the appropriate fall protection systems and that these systems are used by workers. OSHA Standard 1910.132(d) requires employers to assess the workplace for any hazards that may require the use of personal protective equipment (PPE). This includes assessing workers' physical and mental fitness to ‘Work at Height’ safely and providing them with PPE that is appropriate for the task and fitted to the individual worker.

European Union regulation that specifies the need for employers to assess workers' physical and mental fitness for ‘Work at Height’, including the ability to manage the risk of vertigo, is the ‘Work at Height’ Directive (Directive 2001/45/EC). The ‘Work at Height’ Directive was implemented to improve the health and safety of workers who ‘Work at Height’ in the European Union. It sets out the minimum requirements for the protection of workers from falls from height and includes provisions on risk assessment, planning, and organization of ‘Work at Height’. Article 6 of the ‘Work at Height’ Directive requires employers to ensure that ‘Work at Height’ is properly planned, organized, and carried out by competent persons. The article also requires employers to take into account the workers' physical and mental abilities and assess their capacity to work safely at height, including the ability to manage the risk of vertigo.

The ILO Code of Practice on Safety and Health in Ports, published in 2005, recommends that workers who perform ‘Work at Height’ should undergo a pre-employment medical examination to assess their physical and mental fitness for the job, including a test for vertigo or any other conditions that may affect their ability to work safely. This recommendation is mentioned in Section 5.3.3 of the ILO Code of Practice on Safety and Health in Ports, which states that "Before taking up work, and thereafter at appropriate intervals, all persons should undergo a medical examination appropriate to the work to be undertaken. The examination should include an assessment of the individual's fitness to ‘Work at Height’ and their ability to work safely. In addition, the examination should consider any medical conditions, such as vertigo, which may affect an individual's ability to work safely."

## 3) Industrial Workers ‘Work at Height’ evaluation

The non-standard method adopted for verifying Industrial Workers when involved in ‘Work at Height’ activities is by guiding them to walk on a narrow metal beam at an elevation of nearly 5 meters and physiologically evaluating. This test has been termed as ‘Vertigo Test’. Pulse rate and Blood Pressure are monitored before and after the person undergoes the test. Any rapid change in Pulse Rate and Blood Pressure are considered as qualifying parameters for ‘Work at Height’. Checking pulse rate and blood pressure

can provide some insight into a worker's physiological condition, but they are not enough to fully verify a worker's fitness for 'Work at Height'. When "Work at Height", workers are subject to physical and mental stresses that may not be reflected in pulse rate<sup>9</sup> and blood pressure<sup>9</sup> alone. For example, workers may experience dizziness, vertigo, or loss of balance, which may not be reflected in these vital signs. Additionally, factors such as hydration, nutrition, and medication use can also impact pulse rate and blood pressure.

There is no specific international standard that requires only a vertigo test as a mandatory requirement for "Work at Height". However, many international standards and guidelines on "Work at Height" emphasize the importance of assessing workers' physical and mental fitness to 'Work at Height' safely, which may include a vertigo test.

#### 4) Vertigo

Vertigo is a symptom of dizziness that is characterized by a sensation of spinning or whirling. Vertigo<sup>8</sup> is caused by a problem with the inner ear, which is responsible for maintaining balance and equilibrium. The inner ear is made up of two main structures that help maintain balance and spatial orientation: the semi-circular canals and the otolith organs. The semi-circular canals detect angular head movements, such as rotating or tilting, while the otolith organs sense linear acceleration and gravity.

When the head moves, fluid in the inner ear shifts and moves tiny hair cells that are connected to nerves that send signals to the brainstem. The brainstem processes these signals and integrates them with information from other sensory systems, such as vision and touch, to create a sense of balance and spatial orientation. If there is a problem in any of these structures or the brainstem, it can disrupt the balance signals and cause vertigo. For example, if there is inflammation or damage in the inner ear, the hair cells may send inaccurate signals to the brainstem, leading to a false sense of movement or spinning. Similarly, if there is a disruption in the brainstem processing of balance signals, it can lead to vertigo. The most common causes of vertigo include inner ear infections, benign paroxysmal positional vertigo (BPPV), Meniere's disease, and vestibular neuritis. Symptoms of vertigo can include nausea, vomiting, and difficulty with balance and coordination. Treatment for vertigo depends on the underlying cause and may include medication, physical therapy, or other interventions.

#### 5) Relation between Vertigo and 'Work at Height'

Vertigo is one of the potential causes of 'Fall from Height' and not the only cause. Vertigo can significantly increase the risk of falls during work-at-height activities because it can affect the individual's balance and spatial orientation, leading to a loss of equilibrium and a potential fall.

In work-at-height activities, such as construction or maintenance work on elevated surfaces, workers are required to move and balance themselves on uneven and often unstable surfaces. They must be able to maintain a steady and secure footing to prevent falls and injuries.

However, if a worker experiences vertigo, their ability to maintain balance and spatial orientation can be impaired, making it difficult to navigate and perform the necessary tasks. The worker may feel unsteady, dizzy, or disoriented, which can lead to missteps, loss of balance, and ultimately, a fall.

#### 6) Medical Fitness test and examination – 'Work at Height':

The medical tests and examinations required to verify the fitness of a worker involved in 'Work at Height' will depend on the specific requirements of the job, as well as any relevant regulations or guidelines. In general, however, the following tests and examinations may be included:

- a) Vision test<sup>1</sup>: A vision test may be required to ensure that the worker has adequate visual acuity to perform the job safely. This may include tests for color blindness, depth perception, and visual acuity.
- b) Hearing test<sup>2</sup>: A hearing test may be required to ensure that the worker has an adequate hearing to communicate effectively with coworkers and to hear warning signals or alarms.
- c) Cardiovascular test<sup>3,4</sup>: A cardiovascular test may be required to ensure that the worker does not have any heart conditions that could be aggravated by "Work at Height". This may include a stress test, electrocardiogram (ECG), or other relevant tests.
- d) Balance and coordination test<sup>5</sup>: A balance and coordination test may be required to ensure that the worker has adequate balance and coordination to perform the job safely. This may include a vertigo test, as well as tests for other conditions that could affect balance and coordination.
- e) Respiratory test<sup>6</sup>: A respiratory test may be required to ensure that the worker has adequate lung function to perform the job safely. This may include tests for lung capacity, oxygen saturation, and other relevant measures.
- f) Musculoskeletal exam<sup>7</sup>: A musculoskeletal exam may be required to ensure that the worker does not have any conditions that could affect their ability to perform the job safely, such as back pain, joint pain, or other musculoskeletal issues.

It is important to note that the specific tests and examinations required may vary depending on the nature of the work and any relevant regulations or guidelines. For example, the 'Work at Height' Regulations 2005 in the UK require employers to provide a medical examination for workers who are exposed to the risk of injury from a fall from height, which may include tests for any relevant medical conditions that may affect the worker's ability to 'Work at Height' safely. Therefore, it is important for employers to consult relevant regulations and guidelines to determine the specific medical tests and examinations required for their workers involved in 'Work at Height'.

#### 7) Clinical Examination – Vertigo

A clinical examination is an essential step in diagnosing the cause of vertigo. The examination will usually be performed by a healthcare professional, such as an otolaryngologist, neurologist, or primary care physician. The following are

some of the clinical examinations that may be conducted to verify vertigo:

- a) Physical examination: The healthcare professional will perform a physical examination to check for any signs of abnormalities, such as abnormal eye movements, head or neck injuries, or signs of infection.
- b) Dix-Hallpike test: This is a diagnostic test that can help identify Benign Paroxysmal Positional Vertigo (BPPV). The test involves moving the patient's head into specific positions to see if it triggers vertigo symptoms.
- c) Romberg test: This is a simple test that can help identify balance problems. The patient will be asked to stand with their feet together and eyes closed. If they sway or lose their balance, this may indicate a balance problem.
- d) Audiometry: This is a hearing test that can help determine if there is any hearing loss or other problems with the inner ear.
- e) Neurological examination: Based on the severity, a neurological examination may be conducted to evaluate the function of the brain and nervous system. The healthcare professional may check reflexes, muscle strength, coordination, and sensation to identify any abnormalities.
- f) Magnetic Resonance Imaging (MRI): Based on the severity, an MRI may be ordered to evaluate the brain or inner ear structures in more detail if there is a suspicion of a more serious underlying condition causing vertigo, such as a tumor or stroke.

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## 8) Summary

It is important to note that unstandardized medical fitness practices on "Work at Height" may not be as reliable as standardized practices, and may not provide adequate protection for workers. Employers should strive to use standardized medical fitness evaluations that are based on established guidelines and best practices, to ensure that workers are adequately protected and that the workplace is safe.

### Declaration of Interests:

Declare on no competing interests

### Funding:

No external funds are involved in this paper preparation

### Disclaimer

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