

Ergonomics and Physiological Impacts of Computing

Computer Ergonomics · Answer Key · 18 Questions

1. Which specific nerve is most commonly compressed in the carpal tunnel, a condition frequently associated with repetitive keyboard and mouse use?

- A) Ulnar nerve
- B) Median nerve**
- C) Radial nerve
- D) Axillary nerve

2. What is the clinical term for the visual fatigue and ocular strain caused by prolonged focus on digital screens, often leading to reduced blink rates?

- A) Computer Vision Syndrome**
- B) Ocular Hyperopia
- C) Retinal Atrophy
- D) Photopic Astigmatism

3. In ergonomic workstation design, what is the recommended optimal viewing angle (in degrees) for a monitor relative to the user's horizontal line of sight to minimize cervical strain?

- A) 0 to 10 degrees
- B) 15 to 20 degrees**
- C) 30 to 45 degrees
- D) 60 to 75 degrees

4. Which musculoskeletal disorder, characterized by inflammation of the tendons in the thumb, is often linked to excessive use of mobile devices and handheld controllers?

- A) De Quervain's tenosynovitis**
- B) Dupuytren's contracture
- C) Trigger finger
- D) Boutonnière deformity

5. According to the 20-20-20 rule for eye health, how often should a computer user take a break to look at an object at least 20 feet away for 20 seconds?

- A) Every 10 minutes
- B) Every 20 minutes**
- C) Every 45 minutes
- D) Every hour

6. What physiological effect is triggered by the suppression of melatonin production caused by exposure to high-energy visible (HEV) blue light from digital displays at night?

- A) Increased cortisol secretion
- B) Delayed sleep onset latency**
- C) Hyperventilation
- D) Vasoconstriction

7. Which spinal segment is most susceptible to 'text neck' syndrome, a repetitive stress injury caused by prolonged downward flexion of the head while viewing handheld screens?

- A) Lumbar vertebrae
- B) Thoracic vertebrae
- C) Cervical vertebrae**
- D) Sacrum

8. What is the primary mechanism by which blinking frequency changes while reading from a digital screen compared to reading from printed paper?

- A) Frequency increases by 50%
- B) Frequency decreases by approximately 60%**
- C) Frequency remains constant
- D) Frequency fluctuates rhythmically

9. In a neutral seated posture, what should be the approximate angle of the elbow joint to minimize tension in the forearm and shoulder muscles?

- A) 45 to 60 degrees
- B) 70 to 80 degrees
- C) 90 to 100 degrees**
- D) 135 to 150 degrees

10. Which condition, caused by prolonged static posture and poor monitor height, refers to chronic pain in the upper trapezius and levator scapulae muscles?

- A) Myofascial pain syndrome**
- B) Scoliosis
- C) Osteopenia
- D) Fibromyalgia

11. What is the recommended height relationship between the top of the computer monitor and the user's eyes to prevent neck extension?

- A) At eye level
- B) At or slightly below eye level**
- C) 10 cm above eye level
- D) 15 cm below eye level

12. Excessive use of computer input devices can lead to 'Guyon's Canal Syndrome,' which involves the compression of which specific nerve?

- A) Median nerve
- B) Ulnar nerve**
- C) Musculocutaneous nerve
- D) Femoral nerve

13. What is the maximum recommended duration of continuous keyboard use before taking a micro-break to prevent sustained muscular contraction?

- A) 15 minutes**
- B) 30 minutes
- C) 60 minutes
- D) 90 minutes

14. Which health risk is significantly elevated by prolonged sedentary behavior associated with computer work, even when physical activity guidelines are otherwise met?

- A) Metabolic syndrome**
- B) Type 1 diabetes
- C) Bone density loss
- D) Hyperopia

15. What is the function of an ergonomic mouse designed for a vertical grip in relation to the forearm?

- A) It increases carpal pressure
- B) It reduces forearm pronation**
- C) It eliminates the need for mouse pads
- D) It prevents ulnar deviation

16. The condition known as 'Digital Eye Strain' is clinically exacerbated by which environmental factor common in office computing?

- A) High ambient humidity
- B) Low screen refresh rates**
- C) High frequency of natural light
- D) Excessive peripheral auditory input

17. Which of the following is a symptom of Thoracic Outlet Syndrome, often associated with slumped posture while using a laptop?

A) Numbness in the fingers

B) Increased visual acuity

C) Enhanced lung capacity

D) Lowered blood pressure

18. To maintain optimal blood circulation in the lower extremities during long hours at a computer, what should be the positioning of the feet?

A) Crossed at the ankles

B) Dangling without support

C) Flat on the floor

D) Tucked under the chair