

Sports History: Scientific Breakthroughs and Theories

Sports History · Answer Key · 8 Questions

1. Which early 20th-century physiologist's work on the 'all-or-none principle' of muscle contraction, crucial for understanding athletic force generation, was foundational to sports biomechanics?

- A) August Krogh
- B) A.V. Hill
- C) Otto Loewi
- D) Archibald Vivian Hill**

2. The development of VO2 max testing, a key metric for aerobic capacity, owes much to the research of whom, particularly his studies on respiration and oxygen consumption during exercise in the late 19th and early 20th centuries?

- A) Wilhelm Roux
- B) Nathan Zuntz**
- C) E.K. Rühl
- D) Paul Bert

3. The groundbreaking 'Kinematics of the Human Body' by Muybridge in the late 1870s, utilizing multiple cameras to analyze motion, provided the first scientific insights into what aspect of athletic performance?

- A) Muscular fatigue
- B) Proprioception
- C) Locomotion and gait analysis**
- D) Energy expenditure

4. The discovery of the role of lactic acid in muscle fatigue, and its subsequent reinterpretation to understand anaerobic metabolism, is largely attributed to the pioneering research of which scientist in the late 19th century?

- A) John Snow
- B) Ludwig Traube
- C) Carl von Voit**
- D) Augustus Waller

5. The 'force-velocity relationship' in muscle physiology, a fundamental principle explaining how muscle force output changes with contraction speed, was extensively studied and popularized by which scientist in the mid-20th century, significantly impacting training methodologies?

- A) Rodney Hicks
- B) Robert A. R. Hurd**
- C) E.C. Frost
- D) E. B. Hill

6. The earliest systematic studies on the physiological effects of altitude on athletic performance, particularly by the physician and explorer Paul Bert in the 1870s, provided foundational understanding of what critical factor?

- A) Thermoregulation
- B) Oxygen transport and utilization**
- C) Hydration requirements
- D) Nerve impulse transmission

7. The development of the concept of 'progressive overload' in strength training, a cornerstone of modern conditioning, has its roots in early 20th-century observations by scientists like _____, who noted adaptation to increased physical demands.

- A) J. S. Haldane
- B) Arthur Steindler**
- C) Hans Selye
- D) E. J. Y. F. La Cour

8. The understanding of how the nervous system controls and coordinates movement, a field that underpins modern sports technique analysis, was significantly advanced by the work on reflex arcs and proprioception by scientists like Charles Sherrington in the early 20th century. His work primarily focused on the _____.

- A) Endocrine system's role in performance
- B) Peripheral nervous system and spinal cord**
- C) Autonomic nervous system regulation
- D) Central nervous system plasticity