



Harness the Power of a Sweat Monitor for Optimal Workouts

Description

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This band can collect sweat excreted around the wrists or ankles

Soongwon Cho & Ruihao Song

Elastic bands with color-changing sensors can provide insights into muscle exertion by measuring sweat acidity on the skin.

This device, developed by [John Rogers](#) at Northwestern University, can enhance workplace safety and optimize athletic training.

Rogers suggests, "Monitoring pH levels can prevent muscle soreness and fatigue during workouts, while indicating the effectiveness of exercise."

For elite athletes, blood lactate levels are crucial indicators of performance, often requiring invasive tests. To address this, Rogers' team created sweat-monitoring bands with color-changing sensors that can be easily read with a smartphone.

Initial tests revealed that sweat acidity correlates better with blood lactate levels than sweat lactate levels. However, measurements near working muscles showed more accurate results than those taken from wrist bands.

Rogers emphasizes the value of this innovative technology, stating, "Although not exhaustive, it provides novel data previously unavailable."

His company, Epicore Biosystems, produces disposable patches for sweat and electrolyte monitoring, aiding hydration management in strenuous environments and sports settings.

Topics:

Vocabulary List:

1. **Acidity** /ə'sɪdəti/ (noun): The quality of being acidic or having a low pH.
2. **Exertion** /ɪg'zɜːrʃən/ (noun): Physical or mental effort; the act of exerting.
3. **Optimize** /'ɑːptɪmaɪz/ (verb): To make the best or most effective use of a situation or resource.
4. **Correlate** /'kɔːrəleɪt/ (verb): To show or establish the relationship between two things.
5. **Innovative** /ɪ'nəvətɪv/ (adjective): Featuring new methods or ideas; advanced and original.
6. **Electrolyte** /ɪ'lek.trə.laɪt/ (noun): A substance that produces an electrically conducting solution when dissolved.

Comprehension Questions



Multiple Choice

1. Who developed the elastic bands with color-changing sensors for monitoring sweat acidity?
Option: John Rogers
Option: Soongwon Cho & Ruihao Song
Option: Epicore Biosystems
Option: Northwestern University
2. What can the device developed by John Rogers at Northwestern University measure on the skin?
Option: Muscle soreness levels
Option: Sweat acidity
Option: Electrolyte levels
Option: Blood lactate levels
3. What does John Rogers suggest regarding monitoring pH levels?
Option: It can prevent muscle soreness and fatigue
Option: It increases muscle exertion
Option: It enhances blood flow
Option: It improves bone density
4. Which company produces disposable patches for sweat and electrolyte monitoring?
Option: Northwestern University
Option: Epicore Biosystems
Option: Soongwon Cho & Ruihao Song
Option: John Rogers
5. Where do the color-changing sensors in the sweat-monitoring bands provide more accurate results?
Option: Wrist bands
Option: Ankle bands
Option: Near working muscles
Option: Around the neck
6. What kind of data does John Rogers state the innovative technology provides?
Option: Outdated data
Option: Unreliable data
Option: Novel data previously unavailable
Option: Repetitive data



Answer

Multiple Choice: 1. John Rogers 2. Sweat acidity 3. It can prevent muscle soreness and fatigue 4. Epicore Biosystems 5. Near working muscles 6. Novel data previously unavailable

Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. Which term refers to a hostile disagreement or face-off between individuals or groups?
Option: A) Confrontation
Option: B) Therapy
Option: C) Exploration
Option: D) Well-being
2. Which term relates to mental processes such as thinking reasoning and problem-solving?
Option: A) Correlate
Option: B) Cognitive
Option: C) Independence
Option: D) Duration
3. Which term refers to the state of being free from external control or support?
Option: A) Innovative
Option: B) Independance
Option: C) Exertion
Option: D) Signifying
4. Which term means to make the best or most effective use of a situation or resource?
Option: A) Utilization
Option: B) Optimize
Option: C) Resilient
Option: D) Peculiar
5. Which term describes an option or choice that can be substituted for another?
Option: A) Alternative
Option: B) Territorial
Option: C) Acidity
Option: D) Gameplay



6. Which term refers to the specific way in which players interact with a game?

- Option: A) Pneumonia
- Option: B) Gameplay
- Option: C) Ambitions
- Option: D) Cease

7. Which term refers to the treatment of physical or psychological disorders?

- Option: A) Electrolyte
- Option: B) Therapy
- Option: C) Duration
- Option: D) Engaged

8. Which term means introducing new ideas methods or products?

- Option: A) Inception
- Option: B) Innovation
- Option: C) Transitional
- Option: D) Microtransactions

9. Which term refers to small in-game purchases made with real money?

- Option: A) Duration
- Option: B) Microtransactions
- Option: C) Cease
- Option: D) Correlate

10. Which term describes strong desires and determination to achieve success?

- Option: A) Transition
- Option: B) Optimize
- Option: C) Ambitions
- Option: D) Adaptive

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. Efficient _____ of resources is essential for sustainable development.

12. The movie had a running _____ of over two hours.

13. She proved to be _____ in the face of adversity bouncing back from challenges.

14. Physical _____ during the gym session left him feeling exhausted.

15. Studies show a direct _____ between regular exercise and improved health.



16. Animals often display _____ behavior when protecting their nesting sites.
17. The antique clock had a _____ design unlike any other in the collection.
18. The doctor advised reducing the consumption of foods high in _____ to improve digestion.
19. She made a conscious _____ to learn a new language over the summer.
20. The heavy rainfall caused the river to _____ its banks leading to flooding.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The audience was fully in the riveting storyline of the movie.
22. The _____ of the idea can be traced back to a brainstorming session last year.
23. The company prides itself on its approach to product development.
24. The team is currently in a period of _____ as they switch focus to a new project.
25. The workshop aimed to inspire young _____ to pursue their business ideas.
26. Regular exercise and a balanced diet are essential for maintaining good _____.
27. The species showed remarkable traits in response to changes in their environment.
28. The team set out on an exciting _____ of the uncharted territory.
29. The elderly patient was hospitalized due to severe _____ and respiratory distress.
30. His grand _____ led him to establish a successful business empire.

Answer

Multiple Choice: 1. A) Confrontation 2. B) Cognitive 3. B) Independence 4. B) Optimize 5. A) Alternative 6. B) Gameplay 7. B) Therapy 8. B) Innovation 9. B) Microtransactions 10. C) Ambitions

Gap-Fill: 11. utilization 12. duration 13. resilient 14. exertion 15. correlate 16. territorial 17. peculiar 18. acidity 19. endeavor 20. cease

Matching sentence: 1. Engaged 2. Inception 3. Innovative 4. Transition 5. Entrepreneurs 6. Well-being 7. Adaptive



8. Exploration 9. Pneumonia 10. Ambitions

CATEGORY

1. Sci/Tech - LEVEL4

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