



Boost Heart Health with Simple Math, Study Finds

Description

Many individuals rely on smartwatches to keep tabs on their cardiovascular health by tracking daily steps and average heart rate. Researchers are now championing a sophisticated metric that blends these two elements: the Daily Heart Rate Per Step (DHRPS). This is calculated by dividing one's average daily resting heart rate by the average number of steps taken each day.

According to a study published in the Journal of the American Heart Association by Northwestern University's Feinberg School of Medicine, DHRPS offers a deeper understanding of heart efficiency. The findings suggest that those with higher DHRPS numbers, signaling less efficient heart function, are more susceptible to illnesses such as Type II diabetes, hypertension, heart failure, and other cardiovascular diseases.

Zhanlin Chen, a third-year medical student and lead author of the study, explains, "This is a measure of inefficiency. It's about assessing how well—or poorly—your heart performs. The math involved is minimal but reveals much about your heart's health."

Experts see merit in this metric. Dr. Peter Aziz, a pediatric cardiologist at the Cleveland Clinic, noted that DHRPS provides more insight than simply tracking steps or average heart rate. "What truly matters is how efficiently your heart operates given the workload," he said, acknowledging the absence of exercise heart rate data but emphasizing the metric's disease association.

Utilizing data from nearly 7,000 smartwatch users, the study uncovered that those with higher DHRPS had a stronger propensity for developing diseases than those with lower ratios. Ultimately, this innovative approach, designed for cost-effectiveness and ease of calculation, allows health-conscious individuals to gauge their cardiac health independently. Mr. Chen stated, "With just a bit of math, people can take charge of their health in a meaningful way."

Vocabulary List:

1. **Cardiovascular** /ˌkɑːr.di.ʊsˈvæs.kjə.lər/ (adjective): Relating to the heart and blood vessels.
2. **Efficiency** /ɪˈfɪ.ə.n.si/ (noun): The ability to produce desired results without wasted energy or effort.
3. **Metric** /ˈmɛtrɪk/ (noun): A standard of measurement.
4. **Susceptible** /səˈseptəbl/ (adjective): Likely to be influenced or harmed by a particular thing.
5. **Innovative** /ˈɪn.ə.veɪ.tɪv/ (adjective): Introducing new ideas; original and creative in thinking.
6. **Propensity** /prəˈpɛn.sɪ.ti/ (noun): An inclination or natural tendency to behave in a particular way.



Comprehension Questions

Multiple Choice

1. What metric is currently being championed by researchers to blend daily steps and average heart rate for assessing cardiovascular health?
Option: Daily Cardiovascular Index (DCI)
Option: Resting Heart Rate per Step (RHRS)
Option: Daily Heart Rate Per Step (DHRPS)
Option: Stepwise Heart Efficiency Ratio (SHER)
2. How is the Daily Heart Rate Per Step (DHRPS) calculated?
Option: Dividing average daily resting heart rate by average steps taken each day
Option: Subtracting daily resting heart rate from the average daily heart rate
Option: Multiplying average resting heart rate by average steps taken daily
Option: Adding daily steps and daily heart rate, then dividing by 2
3. According to the study by Northwestern University's Feinberg School of Medicine, what does a higher DHRPS number indicate?
Option: Stronger heart function
Option: Lower risk of cardiovascular diseases
Option: Less efficient heart function
Option: Increased overall fitness level
4. Who is cited as saying,
Option: Dr. Zhanlin Chen
Option: Mr. Peter Aziz
Option: Dr. David Smith
Option: Dr. Sarah Johnson
5. Based on the content, what did the study reveal about individuals with higher DHRPS?
Option: They have a lower propensity for developing cardiovascular diseases
Option: They have a stronger propensity for developing diseases
Option: They are more likely to have a higher fitness level
Option: They are not impacted by heart efficiency



6. According to Dr. Peter Aziz, what does DHRPS provide insight into?

- Option: The specific breakdown of exercise heart rate data
- Option: The efficiency of the heart given the workload
- Option: The correlation between daily steps and heart rate
- Option: The impact of diet on cardiovascular health

True-False

7. The DHRPS metric is solely based on tracking daily steps and average heart rate.
8. Dr. Peter Aziz is a pediatric cardiologist working at Harvard Medical School.
9. Individuals with higher DHRPS are less susceptible to Type II diabetes according to the study.
10. DHRPS was found to be ineffective in predicting heart failure in individuals.
11. Zhanlin Chen mentioned that a complex algorithm is involved in calculating DHRPS accurately.
12. Dr. Peter Aziz emphasized the importance of DHRPS in assessing heart efficiency under varying workloads.

Gap-Fill

13. The study mentioned in the content utilized data from nearly 7,000 _____ users.
14. According to the information provided, individuals with higher DHRPS have a stronger propensity for developing diseases than those with lower _____.
15. Zhanlin Chen mentioned that with just a bit of _____, people can take charge of their health in a meaningful way.
16. Dr. Peter Aziz, a pediatric cardiologist at the Cleveland Clinic, noted the absence of _____ in relation to DHRPS.
17. The Daily Heart Rate Per Step (DHRPS) metric is designed for _____ and ease of



calculation.

18. Mr. Chen stated that DHRPS enables health-conscious individuals to gauge their cardiac health

_____.

Answer

Multiple Choice: 1. Daily Heart Rate Per Step (DHRPS) 2. Dividing average daily resting heart rate by average steps taken each day 3. Less efficient heart function 4. Dr. Zhanlin Chen 5. They have a stronger propensity for developing diseases 6. The efficiency of the heart given the workload

True-False: 7. False 8. False 9. False 10. False 11. False 12. True

Gap-Fill: 13. smartwatch 14. ratios 15. math 16. exercise heart rate data 17. cost-effectiveness 18. independently

Vocabulary quizzes

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

1. What term describes a feeling of uplift or support?

Option: Consequences

Option: Efficiency

Option: Buoyed

Option: Innovative

2. Which word best describes something crucial or essential?

Option: Susceptible

Option: Cardiovascular

Option: Vital

Option: Mitigate

3. What refers to the act of withstanding force or pressure?

Option: Antioxidants

Option: Resistance

Option: Correlates

Option: Holistic

4. Which term is used to describe a community of organisms interacting within an environment?

Option: Microbiome



- Option: Ecosystem
- Option: Mitigating
- Option: Prudence

5. What refers to the mental process of acquiring knowledge and understanding?

- Option: Lymphatics
- Option: Neurodegenerative
- Option: Cognition
- Option: Propensity

6. Which term indicates a natural inclination or tendency towards something?

- Option: Propensity
- Option: Exacerbates
- Option: Interaction
- Option: Metric

7. What word describes a state of extreme tiredness or exhaustion?

- Option: Fatigued
- Option: Mitigate
- Option: Osteoporosis
- Option: Mitigating

8. Which term describes an approach that considers the whole system rather than individual parts?

- Option: Colorectal
- Option: Holistic
- Option: Lymphatics
- Option: Neurodegenerative

9. What term relates to the heart and blood vessels?

- Option: Cardiovascular
- Option: Cautioning
- Option: Efficiency
- Option: Correlates

10. What word describes the introduction of new ideas or methods?

- Option: Antioxidants
- Option: Holistic
- Option: Tata Group
- Option: Innovative

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

11. The company implemented strategies to _____ the effects of the economic



downturn.

12. Individuals with weakened immune systems are more _____ to infections.
13. Failing to submit the report on time may have serious _____.
14. Regular screenings can help in the early detection of _____ cancer.
15. Alzheimer's disease is a common _____ disorder that affects memory and cognition.
16. The study aimed to identify factors that _____ with increased job satisfaction.
17. Consuming sufficient calcium and vitamin D can help prevent _____.
18. _____-6 is a cytokine involved in the regulation of immune responses.
19. The _____ system plays a key role in maintaining fluid balance and immunity.
20. The company prides itself on its _____ approach to product design.

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

21. The diversity of bacteria and other microorganisms in the gut contribute to overall health.
22. The protective layers surrounding the brain and spinal cord are known as the meninges.
23. The new software system significantly improved the efficiency of our workflow.
24. The doctor issued a cautioning statement about the potential side effects of the medication.
25. The government introduced policies aimed at mitigating the impact of climate change.
26. Fruits like berries are rich in antioxidants that help protect cells from damage.
27. The doctor provided a positive prognosis for the patient's recovery.
28. The holistic approach to healthcare considers the physical mental and emotional well-being of individuals.
29. Regular exercise mitigates the risk of developing certain chronic diseases.



30. The social interaction among team members improved collaboration and productivity.

Answer

Multiple Choice: 1. Buoyed 2. Vital 3. Resistance 4. Ecosystem 5. Cognition 6. Propensity 7. Fatigued 8. Holistic 9. Cardiovascular 10. Innovative

Gap-Fill: 11. mitigate 12. susceptible 13. consequences 14. colorectal 15. neurodegenerative 16. correlate 17. osteoporosis 18. Interleukin 19. lymphatic 20. innovative

Matching sentence: 1. Microbiome 2. Meningeal 3. Efficiency 4. Cautioning 5. Mitigating 6. Antioxidants 7. Prognosis 8. Holistic 9. Mitigates 10. Interaction

CATEGORY

1. Health - LEVEL4

Date Created

2025/04/03

Author

aimeeyoung99

ESL-NEWS.COM