



Study Uncovers How Exercise Combats Osteoporosis

Description

Osteoporosis is a disease that makes bones weak and affects millions worldwide. Important discoveries may lead to new treatments after scientists found how exercise strengthens bones.

Researchers at the University of Hong Kong found that a special protein, called Piezo1, helps bones grow when we exercise. This finding is important because it may help fight osteoporosis, a condition that causes fragile bones.

The study focused on cells in bone marrow that can become either bone cells or fat cells. Exercise influences these cells to become bone cells. The protein acts as an "exercise sensor" for the bones, promoting growth and reducing fat.

When Piezo1 was removed in mice, their bones weakened, showing more fat. Without this protein, they didn't get the exercise benefits. Scientists could reverse these effects by activating Piezo1, suggesting it could be used in future treatments.

"This discovery shows how movement makes bones stronger," says scientist Xu Aimin. By targeting Piezo1, it's possible to mimic exercise benefits without actual movement, which could help those who can't exercise.

However, treatments are still far away, as this research was in mice. Piezo1 is involved in many body functions, so targeting it needs caution to avoid side effects. Yet, this is a crucial step in understanding osteoporosis, especially as more people live longer.

Eric Honoré, a researcher from France, states this approach could slow bone loss and protect those unable to move, reducing fracture risks. The study was published in "Signal Transduction and Targeted Therapy."

Vocabulary List:

1. **Osteoporosis** /ˌɒstiəʊpəˈrəʊsɪs/ (noun): A disease that causes bones to become weak and brittle.
2. **Protein** /ˈprəʊtiːn/ (noun): A molecule composed of amino acids that plays many critical roles in the body.
3. **Exercise** /ˈɛksəsaɪz/ (verb): Physical activity that enhances or maintains physical fitness.
4. **Influences** /ˈɪnfluənsɪz/ (verb): To have an effect on the character development or behavior of someone or something.
5. **Treatment** /ˈtriːtmənt/ (noun): The management and care of a patient to combat a disease or condition.
6. **Fracture** /ˈfræktʃər/ (noun): An injury or break in a bone.



Comprehension Questions

Multiple Choice

1. What is osteoporosis?

- Option: A disease that weakens muscles
- Option: A disease that makes bones weak
- Option: A disease that affects the heart
- Option: A disease that affects the lungs

2. Which protein helps bones grow when we exercise?

- Option: Fibrinogen
- Option: Piezo1
- Option: Keratin
- Option: Lipase

3. What happens to bones when Piezo1 is removed in mice?

- Option: They become stronger
- Option: They weaken and show more fat
- Option: They shrink in size
- Option: They become more flexible

4. Who stated that movement makes bones stronger?

- Option: Xu Aimin
- Option: Eric Honoré
- Option: Ratan Naval Tata
- Option: Pierre Curie

5. In which publication was the study on Piezo1 and bone growth published?

- Option: Nature
- Option: Science
- Option: BMJ
- Option: Signal Transduction and Targeted Therapy

6. What did Eric Honoré suggest could be reduced by targeting Piezo1?

- Option: Brain function



- Option: Bone density
- Option: Fracture risks
- Option: Cholesterol levels

True-False

- 7. Osteoporosis is a condition that makes bones stronger.
- 8. The study conducted by researchers at the University of Hong Kong focused on skin cells.
- 9. Removing Piezo1 in mice led to stronger bones.
- 10. Xu Aimin suggested that mimicking exercise benefits without actual movement is not possible.
- 11. Eric Honoré is a researcher from China.
- 12. Targeting Piezo1 requires caution to avoid side effects.

Gap-Fill

- 13. Piezo1 acts as an "exercise sensor" for the bones, promoting growth and reducing _____.
- 14. Without Piezo1, mice did not receive the benefits of exercise and their bones showed more _____.
- 15. This approach could slow bone loss and protect those unable to _____.
- 16. Piezo1 is involved in many body functions, so targeting it requires caution to avoid _____.
- 17. The study on Piezo1 and bone growth was published in the journal " _____ ".
- 18. Eric Honoré suggests that targeting Piezo1 could help reduce _____ risks.



Answer

Multiple Choice: 1. A disease that makes bones weak 2. Piezo1 3. They weaken and show more fat 4. Xu Aimin 5. Signal Transduction and Targeted Therapy 6. Fracture risks

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

Gap-Fill: 13. fat 15. move 16. side effects 17. Signal Transduction and Targeted Therapy 18. fracture

Vocabulary quizzes

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

1. What is the main goal of a strengthening program?

- Option: To increase flexibility
- Option: To build muscle mass
- Option: To enhance endurance
- Option: To improve cardiovascular health

2. Which exercise is best for improving stability?

- Option: Running
- Option: Yoga
- Option: Weightlifting
- Option: Swimming

3. Which activity is primarily focused on enhancing balance?

- Option: Cycling
- Option: Dancing
- Option: Hiking
- Option: Powerlifting

4. What do you call a series of exercises performed in succession?

- Option: Interval training
- Option: Circuit training
- Option: Aerobic exercise
- Option: Strength training

5. What does the term "repetitions" refer to in a workout?



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- Option: The total time spent exercising
Option: The number of times an exercise is performed
Option: The amount of weight lifted
Option: The number of sets completed
6. What is a common source of protein for athletes?
Option: Fruits
Option: Vegetables
Option: Meat and dairy
Option: Grains
7. Which condition is characterized by weak and brittle bones?
Option: Arthritis
Option: Osteoporosis
Option: Scoliosis
Option: Celiac Disease
8. What typically results from a bone being stressed beyond its limit?
Option: Sprain
Option: Fracture
Option: Strain
Option: Dislocation
9. What is often recommended to manage osteoporosis?
Option: Increased protein intake
Option: Regular exercise
Option: Avoiding dairy products
Option: High-intensity workouts
10. What type of activity is considered exercise?
Option: Sleeping
Option: Reading
Option: Walking
Option: Sitting

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

11. A guardian is someone who provides _____ for another person.
12. A pet often provides _____ to its owner.



13. The venue was deemed _____ for the event due to its small size.
14. The movie was filled with _____ that kept the audience on the edge of their seats.
15. The office _____ led to several misunderstandings among coworkers.
16. Every _____ should be considered before making a decision.
17. Life is often described as a _____ filled with challenges and learning.
18. He signed up for _____ to improve his skills in the field.
19. Her upbringing had several critical _____ on her values and beliefs.
20. She remained _____ during the stressful situation providing support to others.

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

21. The child was curious about how the world works and asked many questions.
22. Despite the chaos around her she remained unfazed and focused on her task.
23. Her calm and reassuring presence made everyone feel at ease.
24. The hikers struggled at a high altitude due to the thin air and steep trails.
25. With consistent effort he made remarkable progress in his fitness journey.
26. After the tumultuous breakup he needed time to heal and reflect.
27. Family gatherings are a time for love laughter and connection.
28. She was deeply involved in community service and always looked for ways to help others.
29. The patient received effective treatment for their condition at the specialized clinic.
30. Daily exercise is vital for maintaining good health and wellness.

Answer

Multiple Choice: 1. To build muscle mass 2. Yoga 3. Dancing 4. Circuit training 5. The number of times an exercise is performed



6. Meat and dairy 7. Osteoporosis 8. Fracture 9. Regular exercise 10. Walking

Gap-Fill: 11. protection 12. companionship 13. unsuitable 14. drama 15. gossip 16. circumstance 17. journey
18. training 19. influences 20. calm

Matching sentence: 1. curious 2. unfazed 3. presence 4. altitude 5. progress 6. breakup 7. gatherings 8.
involved 9. treatment 10. exercise

CATEGORY

1. Health - LEVEL3

POST TAG

1. B1
2. ESL learning
3. esl news
4. Exercise
5. L3
6. Level 3
7. osteoporosis
8. ScienceAlert

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