The importance of nutrition in bone health is clear, on Earth and on space missions. Space flight can result in bone loss, mainly related to an increase in bone resorption. This increased resorption is associated with an increase in loss of calcium from the body and a decrease in the intestinal absorption of calcium from the diet. As a result, supplemental calcium will not affect bone loss in astronauts. Maintaining vitamin D status is a challenge for space travelers because they are not exposed to ultraviolet light in the shielded spacecraft and their food does not supply adequate vitamin D.

In addition to calcium and vitamin D, many nutrients play a role in bone health and may affect bone loss during space flight. Excess dietary sodium, excess dietary protein, or insufficient vitamin K may exacerbate the negative effects of weightlessness on bone health. Conversely, if the diet were adjusted to optimize the intake of these nutrients, they might also act as countermeasures.

Nutrition, defined as the appropriate intake and balance of nutrients, is critical for crew health on space exploration missions. Supplying food without knowledge of nutrient requirements will not stave off bone loss or other diseases if the nutrients required for optimal health are not available, or are available in excess. Much more work must be done to clearly define what is required for adequate nutrition during space travel. Dietary changes may provide safe and efficacious countermeasures to the negative effects of space flight.