Are Bone Fractures Related to Vitamin and Mineral Deficiencies in College Basketball (Division I and Club) Athletes at the University of Dayton?

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INTRODUCTION

Vitamins are essential nutrients for bodilly function ans deficiencies can lead to many different complications. Vitamins such as D, B12, B6, B2, A, K, and C stimulate healthy bone growth. Specifically, Vitamin D promotes the absorption of the mineral calcium, which is very important for bone growth and density. Vitamin D and calcium deficiencies can result in osteomalacia (bone softening) in adults, increasing the risk of bone fractures, including stress, hairline, compound, transverse, spiral, and greenstick fractures. Vitamin D deficiency is common among athletes and can affect participation, performance, muscle function, and bone health. Sports involving greater amounts of running also put athletes at increased risk. The presence of dietary supplements is high among Division I and high-training athletes, specifically vitamin D and antioxidants (vitamin E and C)

METHODS

- 60 men and women athletes from the Division I and club basketball teams at the University of Dayton completed an online survey.
- The instrument that we used for our research study is a Google form survey, with both closed and open-ended questions. Qualitative measurements were made based on the participants' responses to the survey to determine if vitamin and mineral deficiencies are related to bone fractures in men's and women's college basketball players at the club and Division I levels.
- Participants were asked information such as year, sex, ethnicity if they had or have a fracture, what supplements they are on, and what are in those supplements.
- The survey addressed vitamin supplementation, the prevalence of fractures, and beliefs and attitudes towards supplementation.

RESULTS

- 10 responses
- 60% female, 30% male, and 10% did not disclose
- 50% ranged from 19 to 20 years old, 20% ranged from 21 to 22 years old, 20% ranged from 23 to 24 years old, 10% did not indicate their age
- 20% freshman, 30% sophomores, 10% juniors; 40% seniors
- 30% UD Division I women's, 20% UD Division I men's, 40% UD women's club, and 10% UD men's club
- 20% took some form of multivitamin (Centrum One-A-Day Women's Multivitamin, Men's One-A-Day Multivitamin); 30% took single vitamin supplements (vitamin C, vitamin D, and biotin)
- Multivitamin usage and prevalence of fractures Chi Square Test: X^2 (4, N = 10) = 0.44, $p > 0.05$.

CONCLUSIONS

Due to the small sample size of this research study, a formal conclusion cannot be drawn between the relationships of vitamin and mineral deficiencies and college basketball athletes. All statistical analysis (t-tests and chi square test) indicated that the results are not significant, not correlated, and independent. For example, the chi square test showed that the use of a multivitamin and prevalence of fractures are independent of each other. Further research must be done to better understand this topic. Limitation in this study include a small sample size and limited knowledge of athletes in regards to vitamin and mineral supplements.

DATA

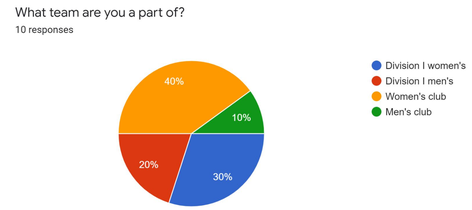
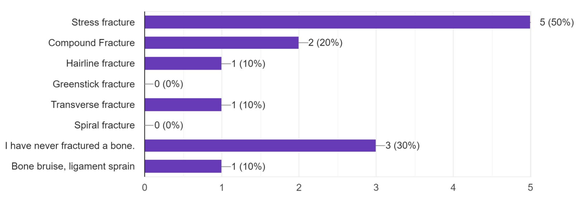
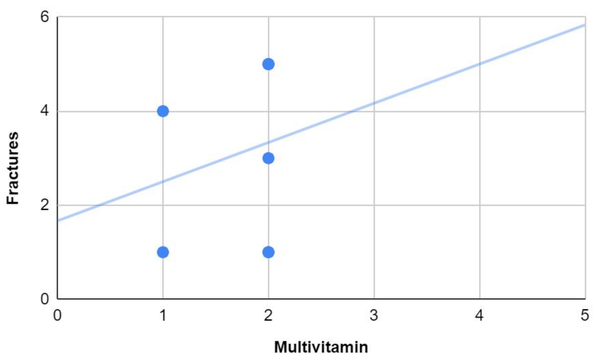


Table 2

Correlation Between Measures

Measure	T-Value
Sex	0.130
Age	0.221
Academic Grade	0.023
Team	0.091





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