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Effects of Exercise, Calcium and Vitamin D on Those 65 and Older Living with Osteoporosis

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Comparative Analysis of Calcium and Vitamin D Supplementation with Weight-Bearing Exercise in Mitigating Osteoporotic Hip Fractures: A Student Nursing Research Perspective

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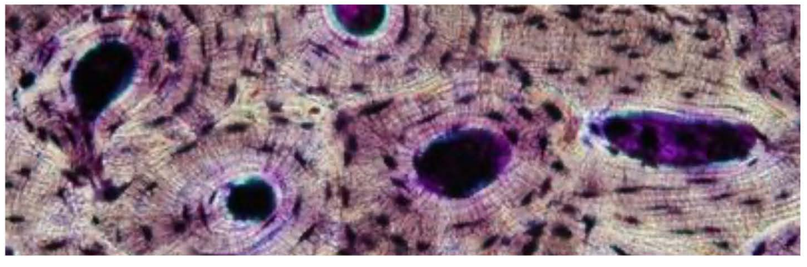
01. OBJECTIVE

There are 37 million fractures that occur annually around the world which is equal to 70 fractures per minute (Epidemiology Of Osteoporosis And Fragility Fractures,2024). It is estimated the mortality rate following a hip fracture is 20-40% within one year (Epidemiology Of Osteoporosis And Fragility Fractures, 2024). A literature review was performed to explore primary prevention techniques for reducing osteoporitic hip fractures. This guided the research question: "In individuals aged 65 and older living with osteoporosis, what is the effectiveness of calcium with vitamin D supplementation and weight-bearing exercises in reducing the occurrence of osteoporotic hip fractures?"



02. METHODS

A literature review was conducted using Proquest to identify evidenced based best practices for prevention of osteoporitic hip fractures. A Boolean search strategy was utilized using “AND” with *keywords*: osteoporosis, hip fracture reduction, geriatric, calcium, vitamin D, weight bearing exercise, and bone mineral density. The article search included filters for full text articles, peer reviewed articles, and articles published within the last five years. An abstract and title review narrowed down the most relevant articles for the highest levels of evidence.

03. RESULTS

Four total articles were selected for review that included; two systematic reviews on weight bearing exercise; one meta-analysis and one randomized controlled study on calcium-vitamin D. The systematic review articles provided evidence for weight bearing exercises, while the meta analysis and randomized controlled studies revealed calcium and vitamin D were effective interventions to help reduce osteoprotic hip fractures.

Keywords: osteoporosis, hip fracture reduction, geriatric, calcium, vitamin D, weight-bearing exercise, bone mineral density

04. CONCLUSION

The review of the literature provides evidence that both interventions are effective in the reduction of falls resulting in osteoporotic hip fractures. The interventions prevent bone loss and will reduce hip fracture occurrence associated with osteoporosis. The evidence reviewed supports the utilization of calcium and vitamin D and weight-bearing exercises. These interventions can be adopted as a generalized primary prevention strategy toward reducing osteoporotic hip fractures. Further research is necessary to indicate long-term effectiveness.

REFERENCES

The following tables highlight ways to implement evidenced-based interventions into practice.

Calcium

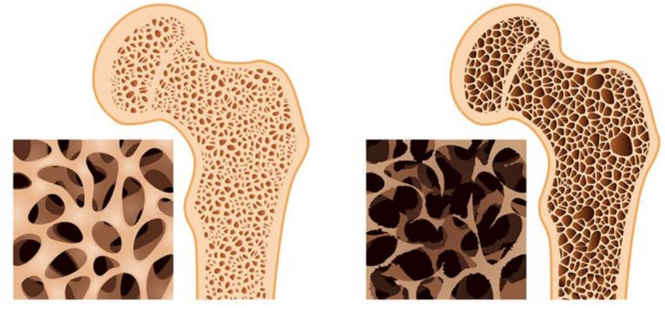
Food	Serving size	Calcium Content
plain, nonfat yogurt	8 oz	488 mg
1% milk	1 cup	305 mg
cooked spinach	1 cup	245 mg
canned sardines	3 oz	325 mg

Vitiman D

Food	Serving size	Vitamin D Content
salmon	3 oz	400 IU
1% milk	1 cup	117 IU
raw mushrooms	1 cup	114 IU
fortified orange juice	1 cup	100 IU

Weight Bearing Exercise

Exercise Type	Examples
Walking	Brisk walking for at least 30 minutes most days
Stair Climbing	Climbing stairs, starting with a few flights
Dancing	High-impact dances like salsa, ballroom, Zumba
Strength Training	Squats, lunges, chest presses, rows with weights
Bodyweight Exercises	Push-ups, squats, lunges, planks



Healthy bone

Osteoporosis