



Investigations of Calcium and Vitamin D to Improve Human Health

A Scientist at Work in the Osteoporosis Research Center

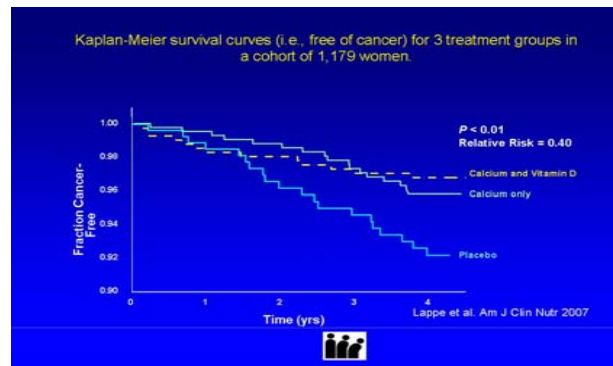
Working in the rich scientific environment of the Osteoporosis Research Center (ORC), Dr. Joan Lappe has focused her research on the effects of nutrition and physical activity on promotion of health. Three of the projects that she and her team have completed are described below.

Scientific Endeavors

Dietary calcium intake and physical activity in girls

We followed 199 nine-year-old girls for eight to ten years, randomly assigning one-third of them to a diet high in calcium foods, while the others continued their usual diets. We have found that:

- young girls with diets rich in calcium foods ingest more essential nutrients than girls whose diets do not have as much calcium.
- in the 4 years surrounding menarche, girls accrue 60-70 percent of their adult bone mass which emphasizes the importance of adequate calcium intake during those years.
- when dairy food is introduced to nine-year old girls in a clinical trial, they continue to consume dairy into late adolescence. This points out the importance of introducing dairy during an early age.
- girls with the highest calcium intake gained 25 percent less weight than girls with the lowest intake. This disputes the notions that dairy food increases weight gain.



Women supplemented with vitamin D and calcium had a 60 percent lower risk of cancer diagnosis over four years of study than those on placebo.

Effects of vitamin D and calcium supplementation in preventing cancer

We conducted a four-year population-based, randomized trial of calcium and vitamin D supplementation in older women in rural Nebraska.

- Supplementation decreased the incidence of cancer by 60 percent.
- A strong body of evidence accumulated over more than 65 years supports the effects of vitamin D on decreasing cancer incidence and mortality.
- However, our study was the first randomized controlled trial of the effects of vitamin D on cancer.
- Our study has been the impetus for a great deal of investigation into the mechanisms of the vitamin D and calcium effect and for clinical studies of the effect of vitamin D on many other disorders.

Calcium and vitamin D supplementation in female Navy recruits
We studied the effects of calcium and vitamin D supplementation on incidence of stress fractures in 5,300 female Navy recruits at the Great Lakes Naval Station in Illinois.

- We found that during the eight weeks of training, supplementation significantly decreased the incidence of stress fractures by 20 percent.
- This was the first clinical trial to show that any nutrient could significantly reduce the risk of stress fractures, which are a major problem for military recruits and civilian athletes.
- As a result, the Navy is supplementing all female recruits, and the U.S. Army Surgeon General has recommended that all recruits be supplemented with calcium and vitamin D.
- Our study has made a great difference in the lives of young people by diminishing the incidence of stress fractures, which causes individual suffering, and, in some cases, long-term disability.

Ignatian Elements

Our work integrates the Ignatian values in numerous ways.

- **Discernment** – As clinical scientists, we explore new ways to improve human health and well-being. We critically examine the results of our studies and reflect on their applicability to various populations.
- **Relationships** – We provide our research volunteers a safe, scientifically valid experience, treat them with courtesy and due appreciation for their participation, and provide service consistent with our research mission. We consider our research volunteers as partners in our research endeavors.
- **Justice** – We include persons from all segments of society in our studies. By discovering and disseminating knowledge pertaining to healthy behaviors, such as dietary intake, we provide an inexpensive, safe approach to health promotion and disease prevention. These modalities are available to most members of the population, including those with limited resources.
- **Contemplation** – Our research team members meet regularly to discuss the progress of our work, the challenges we face, and the successes we have achieved. We strive to develop a team spirit to serve each other as well as our research volunteers.