



THE IMPACT OF WEIGHT LOSS ON OSTEOARTHRITIS OF THE KNEE

What You Should Know

Dr Christopher Vertullo MBBS QLD FRACS
Dr Stephen Rackemann MBBS FRACS F A ORTH A

LOSING A POUND RESULTS IN A 4-POUND REDUCTION IN KNEE-JOINT LOAD FOR EACH STEP, SUGGESTS STUDY OF OVERWEIGHT AND OBESE PATIENTS.

HOBOKEN, NJ -- June 28, 2005 -- The leading cause of disability in the United States, osteoarthritis (OA) is a complex, degenerative joint disease with several established risk factors.

For OA of the knee, the most important modifiable risk factor is obesity. Both the American College of Rheumatology and the European League Against Rheumatism recommend weight loss and exercise to reduce the painful and incapacitating symptoms of knee OA.

As part of a long-term study of the effects of diet and exercise on knee OA, researchers at Wake Forest University found that an average weight loss of 5% in overweight and obese older patients brought an 18% gain in overall function. Drawing from that study population, the researchers set out to investigate the specific, direct relationship between weight loss and knee-joint stress while walking.

Featured in the July 2005 issue of *Arthritis & Rheumatism*, their findings indicate that moderate weight loss results in knee-joint load reduction of a cumulative amount with considerable clinical implications.

Conducted over an 18-month period, the study focused on 142 overweight and obese adults with radiographic evidence of knee OA. Ranging in age from 60 to 89, the subjects were mostly female (74%) and white (75%); all were considered sedentary.

Each subject's weight and body mass index (BMI), as well as scores on standard scales of function and pain, were obtained at baseline and again at 6-months and at 18-months. At baseline and both follow-up visits, each subject also underwent gait analysis and a battery of biomechanical tests to assess changes in knee-joint forces, both compressive and resultant, and moments, both abduction and rotation.

Over the course of the study, all participants followed a prescribed weight loss plan, some through diet only, some through exercise only, and some through a combination of healthy living habits.

At the study's culmination, participants lost an average of 2% of their weight and lowered their BMI by 3%. After adjusting for baseline body mass and baseline knee-joint force, researchers found a significant association between weight loss and reduction in compressive knee-joint loads.

In fact, the force reduction was 4-times greater than the actual weight reduction. In other words, their findings indicated that, for every 1 pound of weight lost, there is a 4-pound reduction in the load exerted on the knee for each step taken during daily activities.

"The accumulated reduction in knee load for a 1-pound loss in weight would be more than 4,800 pounds per mile walked," notes Stephen P. Messier, PhD, the leading author of the study. "For people losing 10 pounds, each knee

would be subjected to 48,000 pounds less in compressive load per mile walked. Although there are no longitudinal

studies indicating that weight loss in humans slows the progression of knee OA, a reduction of this magnitude would appear to be clinically relevant."

Supporting the positive impact of weight loss on knee OA, this compelling study suggests the need for further research into the potential of weight loss -- whether achieved through diet alone or in tandem with exercise -- to slow, and perhaps even prevent, the crippling outcome of a disease too common among older Americans.

REFERENCE: Messier SP, et al. Weight Loss Reduces Knee-Joint Loads in Overweight and Obese Older Adults With Knee Osteoarthritis. *Arthritis & Rheumatism*, July 2005; 52(7):2026-2032.