

“ With arthritis, it’s critical to maintain a healthy weight. I have learned how important it is to make better nutritional choices and exercise to keep my weight down. I joined an arthritis exercise class, and after only six weeks, I’ve seen people doing exercises that they haven’t been able to do in 10 years. Eating right and exercise—you’ve got to do both! —Duane, Age 72, Long Beach ”

Public Health Message

The risk of arthritis increases with increasing weight. Maintaining a healthy weight reduces the risk of developing arthritis, may decrease disease progression, and is significant in improving health-related quality of life.

Arthritis and Weight

The obesity epidemic affects individuals of all age, income, educational, and racial/ethnic groups. Obesity rates increased significantly during 1995–2005, moving states further away from the *Healthy People 2010* target of reducing obesity rates by 15%.¹ Increasing obesity rates raise concern because of their implications for Americans’ health.²

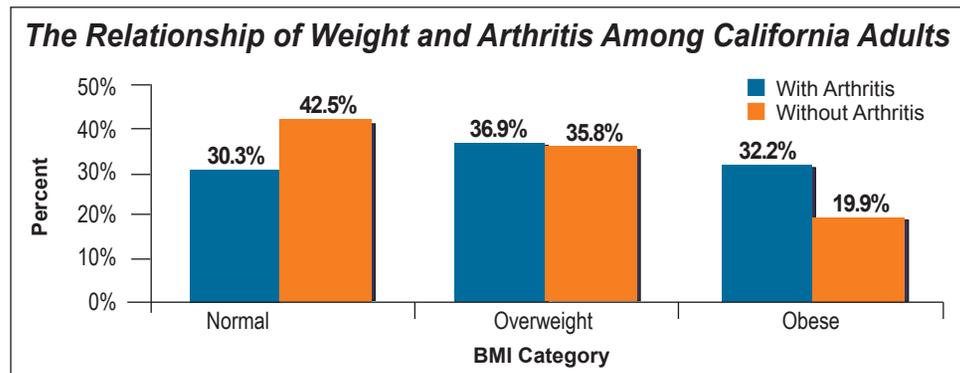
Population-based studies of osteoarthritis, the most common form of arthritis, have consistently shown that overweight persons have higher rates of knee osteoarthritis than do non-overweight control subjects.³

Being overweight increases the load across a joint that increases stress on cartilage and begins the breakdown that can then lead to osteoarthritis.³

People who are overweight may have circulation factors that accelerate cartilage breakdown or affect the bone underneath the cartilage and lead to osteoarthritis.³

The Relationship of Weight and Arthritis

Body Mass Index (BMI) is a number calculated from a person’s weight and height. BMI is a screening tool for weight categories that may lead to health problems.⁴ As a person’s BMI increases, they are more likely to have doctor-diagnosed arthritis.⁵ Attaining and maintaining a healthy weight (BMI < 25) may reduce the risk of developing arthritis.⁶



Source: State of California, Department of Public Health, Behavioral Risk Factor Surveillance System (BRFSS), 2007.

BMI Interpretation

BMI	Below 18.5	18.5–24.9	25.0–29.9	30.0 and Above
WEIGHT STATUS	Underweight	Normal	Overweight	Obese

The Problem

- A strong association exists between self-reported arthritis and disability as BMI increases.⁷
- Excess body weight is a well-established risk factor for several types of arthritis and also increases the risk for disease progression and disability among people with arthritis.⁸
- For women, overweight accounts for more osteoarthritis than any other known factor; for men, overweight is second to major knee injury as a preventable cause of knee osteoarthritis.³
- Two-thirds of the nation is classified as overweight (BMI > 25), and one-third is classified as obese (BMI > 30).⁸
- In California, adults with arthritis are 35% more likely to be obese than adults without arthritis.⁵
- Recent studies have shown a strong association between increasing BMI and both total hip replacement and total knee replacement procedures.^{9,10}

Implications

- Given the rise in obesity prevalence and the risk of arthritis because of obesity, it is expected for the prevalence of arthritis in the U.S. population to mirror obesity trends.⁶
- By 2030, an estimated 67 million adults will have doctor-diagnosed arthritis (25% of the projected total adult population).¹¹
- Overweight, obesity, and their associated health problems have a significant economic impact on the U.S. health care system.¹ In 2003, obesity-attributable medical expenditures in California were estimated at \$7.7 billion.¹
- Nationally, musculoskeletal procedures, such as knee reconstruction, knee and hip replacements, and spinal fusion, were performed in over 3.4 million hospital stays in 2005, representing 9% of all hospitalizations.¹²
- The total cost for musculoskeletal procedures totaled \$13.5 billion in 2004, accounting for over 10% of the total cost of hospital care in the United States.¹² In California, medical care treatment costs for musculoskeletal conditions totaled over \$350 million in 2000.¹³
- If one or two out of every twenty sedentary and/or overweight Californians were to become more physically active and reduce their BMI to a leaner category, then California would realize a significant savings of about \$1.3 billion per year, or almost \$6.4 billion in five years.¹³

Healthy People 2010 Objectives

“ Reduce the proportion of adults with doctor-diagnosed arthritis who experience a limitation in activity due to arthritis or joint symptoms. ”

and

“ Increase the proportion of adults with doctor-diagnosed arthritis who receive health care provider counseling for weight reduction among overweight and obese persons. ”

Public Health Strategies

- Weight loss can reduce stress on weight-bearing joints, limit further injury, and increase mobility. In fact, a weight loss of 11 pounds can reduce the risk of developing knee osteoarthritis by as much as 50%.¹⁴
- For people with arthritis, a health care provider's advice on weight management is important. Health professionals must continue to stress the importance of balanced diet and physical activity for healthy weight loss.¹⁵
- To reverse the growing obesity epidemic, an effective and funded public health response is needed, including surveillance, research, policies, and programs directed at improving environmental factors, increasing awareness, and changing behaviors to increase physical activity, promote a balanced diet, and decrease caloric intake.¹⁶
- Interventions that specifically target persons who are overweight or obese, especially those with arthritis, should also be developed.⁵
- Increasing rates of surgical interventions, such as total knee replacements, and the costs associated with them, emphasize the need to delay and prevent the onset of arthritis and lessen arthritis symptoms through preventive methods, such as physical activity and maintenance of a healthy body weight.¹⁶

References

- ¹Morbidity and Mortality Weekly Report (MMWR), Sept. 15, 2006. State-specific prevalence of obesity among adults: United States, 2005.
- ²Centers for Disease Control and Prevention. 2007. Obesity and overweight: Introduction. Online at: <http://www.cdc.gov/nccdphp/dnpa/obesity/index.htm>.
- ³Felson, D.T. 1996. Weight and osteoarthritis. *American Society for Clinical Nutrition* 63:430-432.
- ⁴Centers for Disease Control and Prevention. 2007. About BMI for adults. Online at: http://www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/about_adult_BMI.htm.
- ⁵State of California, Department of Public Health, Behavioral Risk Factor Surveillance System (BRFSS), 2007.
- ⁶Sahyoun, N.R., Hochberg, M.C., Helmick, C.G., Harris, T., and Pamuk, E.R. 1999. Body mass index, weight change, and incidence of self-reported physician-diagnosed arthritis among women. *American Journal of Public Health* 89(3):391-394.
- ⁷Okoro, C.A., Hootman, J.M., Strine, T.W., Balluz, L.S., and Mokdad, A.H. 2004. Disability, arthritis, and body weight among adults 45 years and older. *Obesity Research* 12(5):854-861.
- ⁸Morbidity and Mortality Weekly Report (MMWR), October 13, 2006. Prevalence of doctor-diagnosed arthritis and arthritis-attributable activity limitation: United States, 2003-2005.
- ⁹Circutini, F.M., Baker, J.R., and Spector, T.D. 1996. The association of obesity of the hand and the knee in women: a twin study. *Journal of Rheumatology* 23(7):1221-1226.
- ¹⁰Wendelboe, A.M., Hegmann, K.T., Biggs, J.J., Cox, C.M., Portmann, A.J., Gildea, J.H., Gren, L.H., and Lyon, J.L. 2003. Relationships between body mass indices and surgical replacements of knee and hip joints. *American Journal of Preventative Medicine* 25(4):290-295.
- ¹¹Leveille, S.G., Wee, C.C., and Ileson, L.I. 2005. Trends in obesity and arthritis among baby boomers and their predecessors, 1971-2002. *American Journal of Public Health* 95(5):1607-1613.
- ¹²Healthcare Cost and Utilization Project. July 2007. Hospital stays involving musculoskeletal procedures, 1997-2005. Agency for Healthcare Research and Quality.
- ¹³State of California, California Department of Health Services, Public Health Institute. 2005. The economic costs of physical activity, obesity, and overweight in California adults: Health care, workers' compensation, and lost productivity. Executive Summary. Online at: <http://www.dhs.ca.gov/ps/cdic/cpns/press/downloads/CostofObesityToplineReport.pdf>.
- ¹⁴Felson, D.T., Zhang, Y., Anthony, J.M., Naimark, A., and Anderson, J.J. 1992. Weight loss reduces the risk for symptomatic knee osteoarthritis in women. *The Framingham Study. Annals of Internal Medicine* 116:535-539.
- ¹⁵Mokdad, A.H., Ford, E.S., Bowman, B.A., Dietz, W.H., Vinicor, F., Bales, V.S., and Marks, J.S. 2003. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. *Journal of the American Medical Association* 289(1):76-79.
- ¹⁶Mehrotra, C., Remington, P.L., Naimi, T.S., Washington, W., and Miller, R. 2005. Trends in total knee replacement surgeries and implications for public health, 1990-2000. *Public Health Reports* 120:278-282.

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