Knee osteoarthritis susceptibility among non-industrial societies undergoing rapid lifestyle changes

Thanks very much for your interest in our research! For more information on the study, please see our recent paper:


If you would like a PDF of the paper, please e-mail Ian Wallace at iwallace@unm.edu.

Here is the abstract from the recent paper:

Non-industrial societies with low energy balance levels are expected to be less vulnerable than industrial societies to diseases associated with obesity including knee osteoarthritis. However, as non-industrial societies undergo rapid lifestyle changes that promote positive energy balance, individuals whose metabolisms are adapted to energetic scarcity are encountering greater energy abundance, increasing their propensity to accumulate abdominal adipose tissue and thus potentially their sensitivity to obesity-related diseases. Here, we propose that knee osteoarthritis is one such disease for which susceptibility is amplified by this energy balance transition. Support for our hypothesis comes from comparisons of knee radiographs, knee pain and anthropometry among men aged ≥40 years in two populations: Tarahumara subsistence farmers in Mexico undergoing the energy balance transition and urban Americans from Framingham, Massachusetts. We show that despite having markedly lower obesity levels than the Americans, the Tarahumara appear predisposed to accrue greater abdominal adiposity (i.e., larger abdomens) for a given body weight, and are more vulnerable to radiographic and symptomatic knee osteoarthritis at lower levels of body mass index. Also, proportionate increases in abdomen size in the two groups are associated with greater increases in radiographic knee osteoarthritis risk among the Tarahumara than the Americans, implying that the abdominal adipose tissue of the Tarahumara is a more potent stimulus for knee degeneration. Heightened vulnerability to knee osteoarthritis among non-industrial societies experiencing rapid lifestyle changes is a concern that warrants further investigation since such groups represent a large but understudied fraction of the global population.