

### Osteoarthritis: Lets Foster a More Holistic Perspective



Ray Marks  
Columbia University  
USA

#### COLUMN ARTICLE

Osteoarthritis disability, a highly prevalent and costly condition both to the patient, as well as society is generally considered to be progressive in nature, with few possibilities of remission. But can osteoarthritis or its severity possibly be prevented or is the disease inevitable? To examine this question, we recently examined the condition known as osteoarthritis in the context of the hip and knee joint. Using three different approaches we attempted to gather in depth information on the overall problem, including the role of cognitions in mediating the consequences of the condition, and possible extrinsic modifiable risk factors for the condition. What emerged is a model that stresses that osteoarthritis, most commonly implicated as being caused by age, may stem from- or be influenced by- multiple overlapping causes, rather than a single cause. Moreover, although osteoarthritis is considered incurable, some of these mediating or moderating factors are amenable to prevention or intervention, and must hence be worthy of consideration in efforts to improve osteoarthritis outlooks. While age itself, often associated with osteoarthritis, is certainly a non-modifiable risk factor that may account for some features of its related disability, age alone does not explain the presence of osteoarthritis in young adults, nor the unilateral distribution of the disease in older adults.

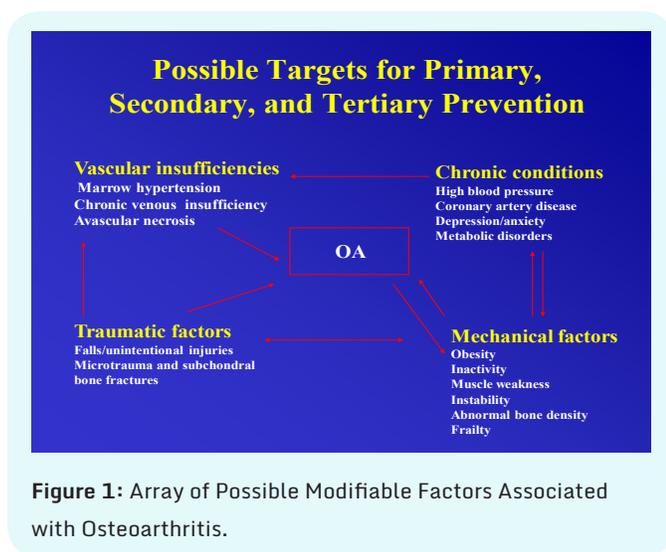
When examining and carefully categorizing the key physical and mental correlates of more than 1000 cases, we con-

sistently noted several key factors potentially related to the development and progression of either hip or knee osteoarthritis. These included the presence of overweight or obesity, the presence of cardiovascular comorbid health conditions, a history of trauma, a history of congenital defects of bone, and muscle weakness. Cognitive factors appearing to relate to worse health outcomes were depression and anxiety, and low self-efficacy for managing pain and symptoms as outlined in Figure 1.

Although the translation of this information into practice requires further research, given the enormity of this problem all over the world, we propose a more holistic focus embodying some of the observed trends in our data, could have important clinical implications when considering the limited scope of present solutions as far as reducing the burden of the disease goes. Indeed, while this may be self-evident to some, a recent PUBMED analysis conducted in between Jan 2012 and May 2016 using the key term 'osteoarthritis', revealed, a strong emphasis on joint replacement surgery (almost 50% of 20968 reports), or drug interventions (approximately 10% reports), rather than on the possible analogues of pain, such as obesity, inflammation, depression, self-efficacy, muscle dysfunction, and exercise or physical therapy, with very little emphasis on prevention (with 1270 articles out of 20968 or 6.05%). In addition, as in PUBMED, most of the information in the data bases serving Web of Science with all data bases combined over all time periods from 2012-2016 on-show most studies have examined knee osteoarthritis (33181 reports), rather than

hip (13637 reports), or hand (1707 reports) or other forms of osteoarthritis.

Many studies too have employed combined samples, even though our data do reveal that disease correlates may not be identical for all forms of osteoarthritis, and very few have comprehensively examined features of most osteoarthritic joints such as effusion, muscle pathology, ligamentous stability, and proprioception. However, as outlined below, in accord with our findings, efforts to prevent injury, muscle weakness, obesity, inactivity, and negative cognitive factors such as depression and self-efficacy may all play a role in reducing the risk of incurring osteoarthritis, or may minimize the extent of the symptoms when present. More carefully controlled research on these topics, and whether prevention of all or some of these can retard the progression of the disease, or improve the many features contributing to osteoarthritis pathology and its outcomes of surgical interventions, where desirable, is also of potential import. As well, more systematic research on commonalities and differences between osteoarthritis manifestations at different joints in well defined samples of similar clinical symptomology is advocated in efforts to broaden the sphere of understanding of this disease, as well as intervention opportunities.



In conclusion, while there is no cure for this condition, a holistic approach to considering the many possible causes

and manifestations of osteoarthritis, is likely to be highly advantageous to medical and allied health practitioners, researchers in the field of gerontology, orthopedics, and rheumatology, as well as economists, health care administrators, and politicians, and is an imperative that should be of high priority to all these groups in light of the aging of all populations and their related consequences.

To this end we recommend research and clinical directives that:

- a. Examine all aspects of the synovial joint to clarify the extent of osteoarthritis pathology and potential treatment points such as the presence of effusion, muscle pathology, bone malalignment, ligamentous instability, and impaired proprioception, rather than focusing solely on articular cartilage.
- b. Examine and treat all prevailing clinical and mental health correlates that can increase the risk of osteoarthritis.
- c. Examine all forms of osteoarthritis and develop a more comprehensive categorization of their similarities and differences, and stage associated differences and similarities.
- d. Develop more comparative studies that are focused on prevention, rather than on surgical and pharmacologic intervention approaches alone.
- e. To broaden the scope of the utility of osteoarthritis related research should employ a more holistic set of outcome measures that can yield more objective findings, such as gait analyses, force plate measures, muscle structural and functional measures, body impedance assessments, balance, and thermography, rather than relying on subjective assessments of pain and dysfunction, and joint space measures that may not correlate with pain or pathology.

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