Osteoarthritis and activity- An analysis of the relationship between eburnation, Musculoskeletal Stress Markers (MSM) and age in two Neolithic hunter-gatherer populations from Gotland

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ABSTRACT
The occurrence of osteoarthritis (OA) as an indicator of physical activity was explored in two Middle Neolithic samples from Gotland (c. 3400-2300 BC) in the Baltic Sea: Ajvide (n=46) and Västerbjers (n=32). The difficulty in diagnosing osteoarthritis is discussed and only eburnation was used as a definite criterion for OA. The relationship between eburnation lesions and Musculoskeletal Stress Markers (MSM) was investigated particularly in relation to age, but also with reference to patterns of sex, body side and site.

Results show that increasing prevalence of eburnation as well as increased MSM scores was highly correlated with age. In the combined sample, females exhibited higher frequencies of eburnation, while total MSM mean scores were higher in males. Significantly higher MSM mean scores were also found in those individuals with eburnation lesions. Västerbjers exhibited higher frequencies of eburnation as well as higher mean MSM scores, which in part may be explained by the difference in age distribution at the two sites. However, the differences in both eburnation and MSM patterns between the sexes, and between age groups as well as between the two sites indicate that other factors also have to be considered. These factors may include genetic predisposition and possibly activity, although, a direct link (other than age) between eburnation and MSM was difficult to discern.

Key words: Degenerative joint disease; MSM; Ajvide; Västerbjers; Middle Neolithic; Gotland; Sweden