

Abstract:

Interpretation of changes of humeral asymmetry during the Holocene period was based on the analysis of upper limb muscle activity during cereal grinding using the saddle quern and rotary quern. The aim of the diploma thesis was to test if the dominant upper limb muscle activity during cereal grinding using the saddle quern and rotary quern might be estimated by measuring the activity of *musculus deltoideus (pars clavicularis)*, *musculus infraspinatus*, *musculus pectoralis major* and *musculus triceps brachii (caput longum)*. Using surface electromyography, we have analyzed activity of *musculus biceps brachii*, *musculus deltoideus (pars clavicularis)*, *musculus deltoideus (pars acromialis)*, *musculus deltoideus (pars spinalis)*, *musculus pectoralis major*, *musculus infraspinatus*, *musculus triceps brachii (caput laterale)* and *musculus triceps brachii (caput longum)* during cereal grinding using the saddle quern and rotary quern in 25 subjects. Consistent with our prediction, *musculus biceps brachii* was the least active muscle during saddle quern grinding and clockwise rotary grinding, therefore it is possible to exclude *musculus biceps brachii* from the sample of analyzed muscles. *Pars clavicularis*, *pars acromialis* and *pars spinalis* of *musculus deltoideus* were more active during rotary quern grinding than saddle quern grinding; it is therefore possible to exclude *pars acromialis* and *pars spinalis* of *musculus deltoideus* from the muscle sample for comparison of upper limb muscle activity during cereal grinding using the saddle quern and rotary quern. The activity of *musculus triceps brachii (caput laterale)* during clockwise rotary grinding was greater than its activity during maximum voluntary isometric contraction, which could mean that the activity of *musculus triceps brachii (caput laterale)* during rotary grinding cannot be estimated using normalization to maximum isometric voluntary contraction. Therefore, *caput longum* of *musculus triceps brachii* could be better for estimation of activity of *musculus triceps brachii*. Our results supported the selection of *musculus infraspinatus*, *musculus pectoralis major*, *musculus deltoideus (pars clavicularis)* and *musculus triceps brachii (caput longum)* for analysis of upper limb muscle activity during cereal grinding using the saddle quern and rotary quern.

Key words: muscle activity, cereal grinding, upper limb, interindividual variability, electromyography, saddle quern, rotary quern