WITHERS HEIGHT

The height at the withers of a horse used to be expressed in "hands" (one hand = 4 inches) or in “feet” (one foot = 12 inches), and in "inches". Since one inch = 25,4 millimeters, a horse "21 hands high" or “7 feet high” stands 213, 4 cm at the withers. According to Willoughby (1974) the largest draft horses may reach this height.

When live animals cannot be measured, the height at the withers is estimated by multiplying the length of one of the limb bones by an adequate number. Such numbers were proposed for horses by Kiesewalter in 1889 ('Kiesewalter's indices' of Gromova, 1949a, p.14). But as already pointed by many authors, the results are not satisfactory. In cursorial animals, the proximal limb bones (humerus, femur, radius, tibia) tend to be relatively short while more distal limb bones, in particular metapodials, tend to be long (Gregory 1912, Osborn 1929). A sensible estimation of withers heights must depend on the knowledge of the proportions between all limb bone lengths.

Willoughby (1974) published the average limb bones lengths and withers height of many modern equids. Using his data and my own, the following table proposes indices for some modern forms, species, and subspecies. When dealing with fossil skeletons or assemblages of various bones, the general body built must be guessed first (by drawing a ratio diagram of the limb bone proportions). The indices fitting best to that body built may then be applied for the estimation of the withers height. For the very large metapodials not associated to any proximal bone, the estimation is risky: in extant cursorial equids, the withers height may be obtained by multiplying the metapodial lengths by ‘indices’ as small as 5.32 for the metacarpals and 4.52 for the metatarsals. In graviportal equids, however, the corresponding indices may reach respectively 6.72 and 5.87. Thus, the large Villafranchian metapodials of Gannat may point to withers heights of 156cm if the equid of Gannat was extremely cursorial or 202cm if it was extremely graviportal!

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