SCORING GUIDELINES FOR SKELETAL BONE AGE ESTIMATION

GUIDELINES FOR PUBIC SYMPHYSIS PHASES:

Phase 1	The pit is shallow and flat, and there are billows in the pit. The pit is shallow U-shaped in cross-section. The bone is very firm and solid, smooth to the touch, dense, and of good quality. The walls of the rim are thick. The rim may show the beginnings of scalloping.
Phase 2	There is an indentation to the pit. The pit is V-shaped in cross-section, and the rim is well defined with round edges. The rim is regular with some scalloping. The bone is firm and solid, smooth to the touch, dense, and of good quality. There is no flare to the rim edges; they are parallel to each other. The pit is still smooth inside, with little to no porosity. In females, the central arc, which manifests on the anterior and posterior walls as a semicircular curve, is visible.
Phase 3	The pit is V-shaped, and there is a slight flare to the rim edges. The rim edges are becoming undulating and slightly irregular, and there may be remnants of scallops, but they look worn down. There are no bony projections from the rim. There is porosity inside the pit. The bone quality is good; it is firm, solid, and smooth to the touch. The rim edges are rounded, but sharp. In many females, there is a build-up of bony plaque, either in the bottom of the pit or lining the interior of the pit, creating the appearance of a two-layer rim. An irregular central arc may be apparent.
Phase 4	The pit is deep and U-shaped. The edges of the pit flare outwards, expanding the oval area inside the pit. The rim edges are not undulating or scalloped but are irregular. There are no long bony projections from the rim, and the rim edges are thin, but firm. The bone quality is good but does not feel dense or heavy. There is porosity inside the pit. In some males, two distinct depressions are visible in the pit. In females, the central arc may be present and irregular; however, the superior and inferior edges of the rim have developed, decreasing the prominence of the central arc.
Phase 5	There are frequently small bony projections along the rim edges, especially at the superior and inferior edges of the rim. The pit is deep and U-shaped. The rim edges are irregular, flared, sharp, and thin. There is porosity inside the pit. The bone quality is fair; the bone is coarse to the touch and feels lighter than it looks.
Phase 6	The bone quality is fair to poor, light in weight, and the surfaces of the bone feel coarse and brittle. There are bony projections along the rim edges, especially at the superior and inferior edges, some of which may be over 1 cm long. The pit is deep and U-shaped. The rim is very irregular, thin, and fragile. There is porosity inside the pit. In some cases, there may be small bony extrusions inside the pit. In females, the central arc is not prominent.
Phase 7	The bone is very poor quality, and in many cases, translucent. The bone is very light, sometimes feeling like paper, and feels coarse and brittle to the touch. The pit is deep and U-shaped. There may be long bony growths inside the pit. The rim is very irregular with long bony projections. In some cases, much of the cartilage has ossified and window formation occurs. In some females, much of the cartilage in the interior of the pit has ossified into a bony projection extending more than 1 cm in length.
Variant	In some males, the cartilage has completely or almost completely ossified. The ossification tends to be a solid extension of bone, rather than a thin projection. All of the bone is of very good quality, including the ossification. It is dense, heavy, and smooth. In these instances, bone quality should be the determining factor. There are probably other factors, such as disease, trauma, or substance abuse that caused premature ossification of the cartilage. When the individual is truly very old, the bone quality will be very poor. Be aware of these instances where a rib end may appear very old because of ossification of the cartilage but is really actually a young individual, which can be ascertained by bone quality. In these cases, consult other age indicators in conjunction with the rib end.

GUIDELINES FOR STERNAL EDGES OF THE FOURTH RIBS PHASES:

Phase 1	The pit is shallow and flat, and there are billows in the pit. The pit is shallow U-shaped in cross-section. The bone is very firm and solid, smooth to the touch, dense, and of good quality. The walls of the rim are thick. The rim may show the beginnings of scalloping.
Phase 2	There is an indentation to the pit. The pit is V-shaped in cross-section, and the rim is well defined with round edges. The rim is regular with some scalloping. The bone is firm and solid, smooth to the touch, dense, and of good quality. There is no flare to the rim edges; they are parallel to each other. The pit is still smooth inside, with little to no porosity. In females, the central arc, which manifests on the anterior and posterior walls as a semicircular curve, is visible.
Phase 3	The pit is V-shaped, and there is a slight flare to the rim edges. The rim edges are becoming undulating and slightly irregular, and there may be remnants of scallops, but they look worn down. There are no bony projections from the rim. There is porosity inside the pit. The bone quality is good; it is firm, solid, and smooth to the touch. The rim edges are rounded, but sharp. In many females, there is a build-up of bony plaque, either in the bottom of the pit or lining the interior of the pit, creating the appearance of a two-layer rim. An irregular central arc may be apparent.
Phase 4	The pit is deep and U-shaped. The edges of the pit flare outwards, expanding the oval area inside the pit. The rim edges are not undulating or scalloped but are irregular. There are no long bony projections from the rim, and the rim edges are thin, but firm. The bone quality is good but does not feel dense or heavy. There is porosity inside the pit. In some males, two distinct depressions are visible in the pit. In females, the central arc may be present and irregular; however, the superior and inferior edges of the rim have developed, decreasing the prominence of the central arc.
Phase 5	There are frequently small bony projections along the rim edges, especially at the superior and inferior edges of the rim. The pit is deep and U-shaped. The rim edges are irregular, flared, sharp, and thin. There is porosity inside the pit. The bone quality is fair; the bone is coarse to the touch and feels lighter than it looks.
Phase 6	The bone quality is fair to poor, light in weight, and the surfaces of the bone feel coarse and brittle. There are bony projections along the rim edges, especially at the superior and inferior edges, some of which may be over 1 cm long. The pit is deep and U-shaped. The rim is very irregular, thin, and fragile. There is porosity inside the pit. In some cases, there may be small bony extrusions inside the pit. In females, the central arc is not prominent.
Phase 7	The bone is very poor quality, and in many cases, translucent. The bone is very light, sometimes feeling like paper, and feels coarse and brittle to the touch. The pit is deep and U-shaped. There may be long bony growths inside the pit. The rim is very irregular with long bony projections. In some cases, much of the cartilage has ossified and window formation occurs. In some females, much of the cartilage in the interior of the pit has ossified into a bony projection extending more than 1 cm in length.
Variant	In some males, the cartilage has completely or almost completely ossified. The ossification tends to be a solid extension of bone, rather than a thin projection. All of the bone is of very good quality, including the ossification. It is dense, heavy, and smooth. In these instances, bone quality should be the determining factor. There are probably other factors, such as disease, trauma, or substance abuse that caused premature ossification of the cartilage. When the individual is truly very old, the bone quality will be very poor. Be aware of these instances where a rib end may appear very old because of ossification of the cartilage but is really actually a young individual, which can be ascertained by bone quality. In these cases, consult other age indicators in conjunction with the rib end.

GUIDELINES FOR AURICULAR SURFACE PHASES:

Phase	Morphological Features
1	Billowing with possible striae; mostly fine granularity with some coarse granularity possible
2	Striae; coarse granularity with residual fine granularity; retroauricular activity may be present
3	Decreased striae with transverse organization; coarse granularity; retroauricular activity present beginnings of apical change
4	Remnants of transverse organization; coarse granularity becoming replaced by densification; retroauricular activity present; apical change; macroporosity is present
5	Surface becomes irregular; surface texture is largely dense; moderate retroauricular activity; moderate apical change; macroporosity
6	Irregular surface; densification accompanied by subchondral destruction; severe retroauricular activity; severe apical change; macroporosity

GUIDELINES FOR THIRD MOLAR PHASES:

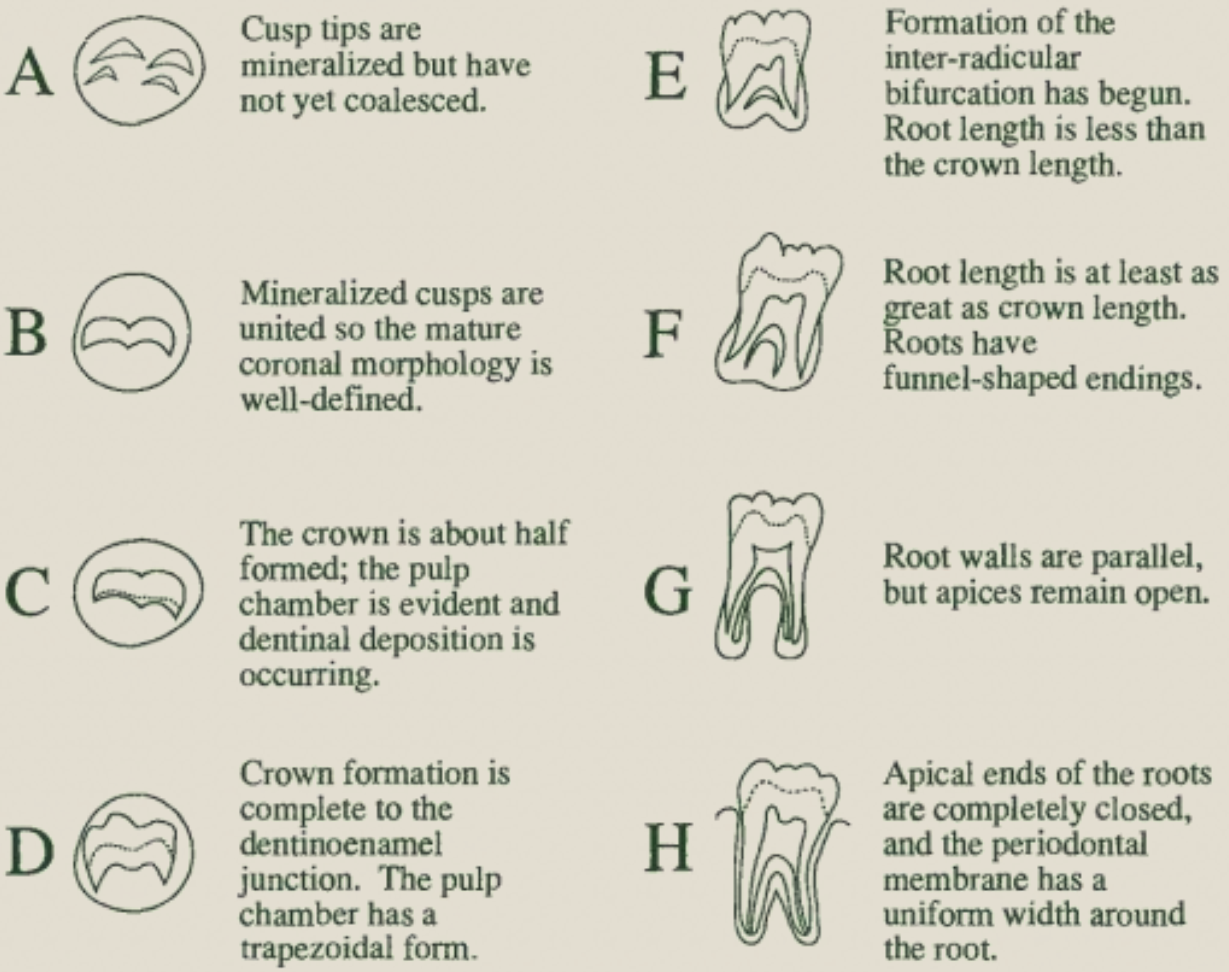

FIG. 1—*Schematic drawings and definitions of the eight stages of crown and root formation used to score third molar development (modified from Demirjian et al. [8]). Grades A and B did not occur in the age interval examined (14.1 to 24.9 yrs), and grade C occurred in less than 1% of the sample and was omitted from analysis.*