

## Supplementary materials

# 3D Condylar Forms and Positions in Association with Various Vertical Skeletal Patterns in Chinese Adolescents

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**Table S1** Definitions of anatomic landmarks and planes.

Landmarks	Definition
<b>S</b>	The midpoint on sella turcica
<b>L-CyH</b>	Left condylar head most superior point
<b>L-Ip</b>	The inner most point, on the left condyle, assess the largest width on x-axis, along the horizontal sectional images in superior-inferior direction.
<b>L-Op</b>	The outermost point, on the left condyle, assesses the largest width on x-axis, along the horizontal sectional images in superior-inferior direction.
<b>L-At</b>	The anterior most point, on the left condyle, assesses the largest width on Y-axis, along the horizontal sectional images in superior-inferior direction.
<b>L-Pst</b>	The posterior most point, on the left condyle, assesses the largest width on Y-axis, along the horizontal sectional images in superior-inferior direction.
<b>L-CM</b>	The most inferior point on sigmoid notch, on the left condyle, along the horizontal sectional images in superior-inferior direction.
<b>L-CN</b>	The posterior most point, on the left condyle, along the Y-axis that crossed L-CM on the horizontal plane.
<b>Mid-L</b>	The midpoint between L-CM and L-CN
<b>L-Go</b>	Gonion, the midpoint on the contour connecting the ramus and the body of the mandible on the left lateral view.
<b>Me</b>	Menton, the most inferior point on the mandibular symphysis [i.e. bottom of the chin].
<b>R-CyH</b>	The most superior point on the right condylar head.
<b>R-Ip</b>	The inner most point, on the right condyle, assesses the largest width on x-axis, along the horizontal sectional images in superior-inferior direction.
<b>R-Op</b>	The outermost point, on the right condyle, assesses the largest width on x-axis, along the horizontal sectional images in superior-inferior direction.
<b>R-At</b>	The anterior most point, on the right condyle, assesses the largest width on Y-axis, along the horizontal sectional images in superior-inferior direction.
<b>R-Pst</b>	The posterior most point, on the right condyle, assesses the largest width on Y-axis, along the horizontal sectional images in superior-inferior direction.
<b>R-CM</b>	The most inferior point on sigmoid notch, on the right condyle, along the horizontal sectional images in superior-inferior direction.
<b>R-CN</b>	The most posterior point, on the right condyle, along the Y-axis that crossed L-CM on the horizontal plane.
<b>R-Go</b>	Gonion, the midpoint on the contour connecting the ramus and the body of the mandible on the right lateral view.
<b>Pog</b>	Pogonion, the most anterior on the contour of the chin.
<b>PS-hr plane</b>	The horizontal plane parallel to Frankfort horizontal plane and passing through S point.
<b>PS-sg plane</b>	The sagittal plane vertical to PS-hr plane and passing through S point and hard tissue.
<b>PS-cr plane</b>	The coronal plane vertical to PS-hr and PS-sg plane and passing through S point.
<b>LC In plane</b>	Inferior plane of left condyle, horizontal plane crossed L-CM.
<b>RC In plane</b>	Inferior plane of right condyle, horizontal plane crossed R-CM
<b>Me plane</b>	Horizontal plane crossed Me.

**Table S2** Linear and angular measurements and their definitions.

Measurements	Definitions
<b>Size measurements (mm)</b>	
<b>HCL</b>	Left condylar height: distance of L-CyH to LCIn plane.
<b>LLC</b>	Left condylar length: distance between L-Ip and L-Op.
<b>WLC</b>	Left condylar width: distance between L-At and L-Pst.
<b>HRC</b>	Right condylar height: distance of R-CyH to RCIn plane.
<b>LRC</b>	Right condylar length: distance between R-Ip and R-Op.
<b>WRC</b>	Right condylar width: distance between R-At and R-Pst.
<b>Position measurements (mm)</b>	
<b>LCy-Shr</b>	Distance of L-CyH to PS-hr plane.
<b>LCy-Scr</b>	Distance of L-CyH to PS-cr plane.
<b>LCy-Ssg</b>	Distance of L-CyH to PS-sg plane.
<b>LCy-Me</b>	Distance of L-CyH to Me plane.
<b>Pog-Ssg</b>	Distance of Pog to PS-sg plane.
<b>RCy-Shr</b>	Distance of R-CyH to PS-hr plane.
<b>RCy-Scr</b>	Distance of R-CyH to PS-cr plane.
<b>RCy-Ssg</b>	Distance of R-CyH to PS-sg plane.
<b>RCy-Me</b>	Distance of R-CyH to Me plane.
<b>Angular Measurements ( ° )</b>	
<b>LCGM</b>	Angle of point L-CyH to L-Go to L-Me.
<b>LHrP</b>	Angle of left condylar growth. Direction and horizontal plane.
<b>LCrP</b>	Angle of left condylar growth. Direction and coronal plane.
<b>LSgP</b>	Angle of left condylar growth. Direction and sagittal plane.
<b>RCGM</b>	Angle of point R-CyH to R-Go to R-Me.
<b>RHrP</b>	Angle of right condylar growth. Direction and horizontal plane.
<b>RCrP</b>	Angle of right condylar growth direction and coronal plane.
<b>RSgP</b>	Angle of right condylar growth direction and sagittal plane.

The vectors of condylar growth directions are represented by the lines R-CyH to Mid-R and L-CyH to Mid-L.