A parametric head geometry model accounting for variation among adolescent and young adult populations

Developed a statistical head geometry model that accounts for size and shape variations among the adolescent and young adult population.

Head CT scans of 101 subjects between ages 14 and 25 were analyzed.

Statistical geometry models accounted for a high percentage of morphological variations in adolescent and young adults in:

- Scalp geometry
- Outer skull geometry
- Inner skull geometry
- Skull thickness (error < 1 mm)

Skull and scalp statistical geometry models were developed as a function of:

<table>
<thead>
<tr>
<th>Age</th>
<th>Stature</th>
<th>Sex</th>
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</thead>
<tbody>
<tr>
<td>Head Breadth</td>
<td>Head Length</td>
<td>Tragion-to-Top of Head</td>
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These statistical geometry models may serve as the geometric basis for development of individualized head finite element models for injury assessment, headgear design, and other safety applications.