# BIOKIN=METRICS <br> ALIGNING HEALTHCARE AND TECHNOLOGY 

## Vertebral Angulations



On the image the vertebra will be numbered in red as well as the angle measure.
The measure in green is the angulation ${ }^{\circ}$ for the two vertebrae it is listed between. (i.e. C2-C3 angulation is listed between C2 and C3.)
Image 1A - Vertebral Angulations (Cervical

| Fertebra | Angle ( ${ }^{\circ}$ ) | Angulation $\left({ }^{\circ}\right)$ | Result |
| :---: | :---: | :---: | :---: |
| C2-3 | 63.9 | 4.0 | Normal |
| C3-4 | 59.9 | 6.4 | Normal |
| C4-5 | 53.5 | 3.2 | Normal |
| C5-6 | 50.3 | 6.4 | Normal |
| C6-7 | 43.9 | 6.1 | Normal |
| C7-T1 | 37.8 | N/A | N/A |

Angular motion is measured by determining the anterior angular motion of one vertebra over another. A diagnosis of AOMSI in the cervical spine by angular loss of motion segment integrity measurements requires angular motion of more than 11 degrees greater than each adjacent level on the flexion radiograph. Angular motions between 7 and 11 degrees are abnormal but not ratable. (AMA Guides)

Image 1A - Vertebral Translations (Cervical Flexion)

| Vertebra | A Translation <br> $(\mathbf{m m})$ | B - Diameter <br> $(\mathbf{m m})$ | A/B Ratio <br> $(\%)$ | Result |
| :---: | :---: | :---: | :---: | :---: |
| C3 | 0.2 posterior | 18.1 | 1.1 | Normal |
| C4 | 0.2 posterior | 18.7 | 1.1 | Normal |
| C5 | 0.1 posterior | 19.1 | 0.5 | Normal |
| C6 | 1.5 posterior | 21.1 | 7.1 | Normal |
| C7 | 0.6 posterior | 21.1 | 2.8 | Normal |

Translational motion is measured by determining the anteroposterior motion of one vertebra over another. A diagnosis of AOMSI in the cervical spine by translational loss of motion segment integrity measurements requires greater than $20 \%$ anterior OR greater than $20 \%$ posterior relative translation of one vertebra on another, on flexion OR extension radiographs, respectively. (AMA Guides 6th Ed.)

Image 1A - George's Line Angles
(Cervical Flexion)

| Vertebra | Angle $\left({ }^{\circ}\right)$ |
| :---: | :---: |
| C2-3 | 10.7 |
| C3-4 | -3.0 |
| C4-5 | 4.1 |
| C5-6 | 2.6 |
| C6-7 | 6.0 |

## FINDINGS AND IMPRESSIONS

Cervical Spine - Lateral Flexion:

- The angle of curvature between the C2 and C7 vertebrae is 20.4 degrees.


## Angulation Table

For each vertebra specified in the Vertebral Angulations table:

- The angle is measured between the vertebra's bottom plate and the horizontal.
- The angulation is the vertebra's angle minus the angle of the vertebra underneath. If the concavity between the two vertebrae is towards the patient's anterior side, the sign is positive; if it is towards the patient's posterior side, the sign is negative.


## Rating Result Column

This column will appear only when the image is a Flexion view. It is not included when the image is an Extension or a Neutral view.
(Also reference the Legend below the Angulation table.)

| Result | Description |
| :--- | :--- |
| Normal | 'Normal' will appear in black font color if the angulation of the <br> corresponding vertebra is less than or equal to $7^{\circ}$. |
| Abnormal | 'Abnormal' will appear in gold font color if the angulation of the <br> corresponding vertebra is greater than $7^{\circ}$ but less than or equal to $11^{\circ}$. <br> Ratable'Ratable' will appear in red font color if the angulation of the corresponding <br> vertebra is greater than $11^{\circ}$. |

## Translation Table

For each vertebra specified in the Vertebral Translation table:

- The diameter is obtained by taking the average of all the diameter values for that vertebra.
- The translation-to-diameter ratio (of $\mathrm{A} / \mathrm{B}$ ratio) is computed using the average vertebra diameter.


## Rating Result Column

This column will appear when the image is a Flexion or an Extension view. It is not included when the image is a Neutral view.
(Also reference the Legend below the Translation table.)

| Result | Description |
| :--- | :--- |
| Normal | 'Normal' will appear in black font color if the $A / B$ ratio of the corresponding <br> vertebra is less than or equal to $20 \%$. |


| Ratable | 'Ratable' will appear in red font color if the $A / B$ ratio of the corresponding <br> vertebra is greater than $20 \%$. |
| :--- | :--- |

You will have the option to add the Table of George's Line Angles to your AOMSI report, even if you did not select the George's Line measure on the Advanced Line Analysis button. This is due to all the George's Line points are included within the Vertebral Angulation or Translation measures.

