



# MODERN CHIROPRACTIC CENTER

## Radiographic Impression Report

Prepared for: Bad Spine  
Patient #: SpineBad2013629000  
Insurance #:  
Gender: Male  
Date of Birth: 8/7/1954  
Address:

Evaluation Date: 7/19/2019  
Date X-Ray Taken: 7/19/2019



Prepared by:  
Nasium Clinic  
Someplace Drive  
Somewhere Cityville, Florida  
34653



**Radiographic Impression Report**

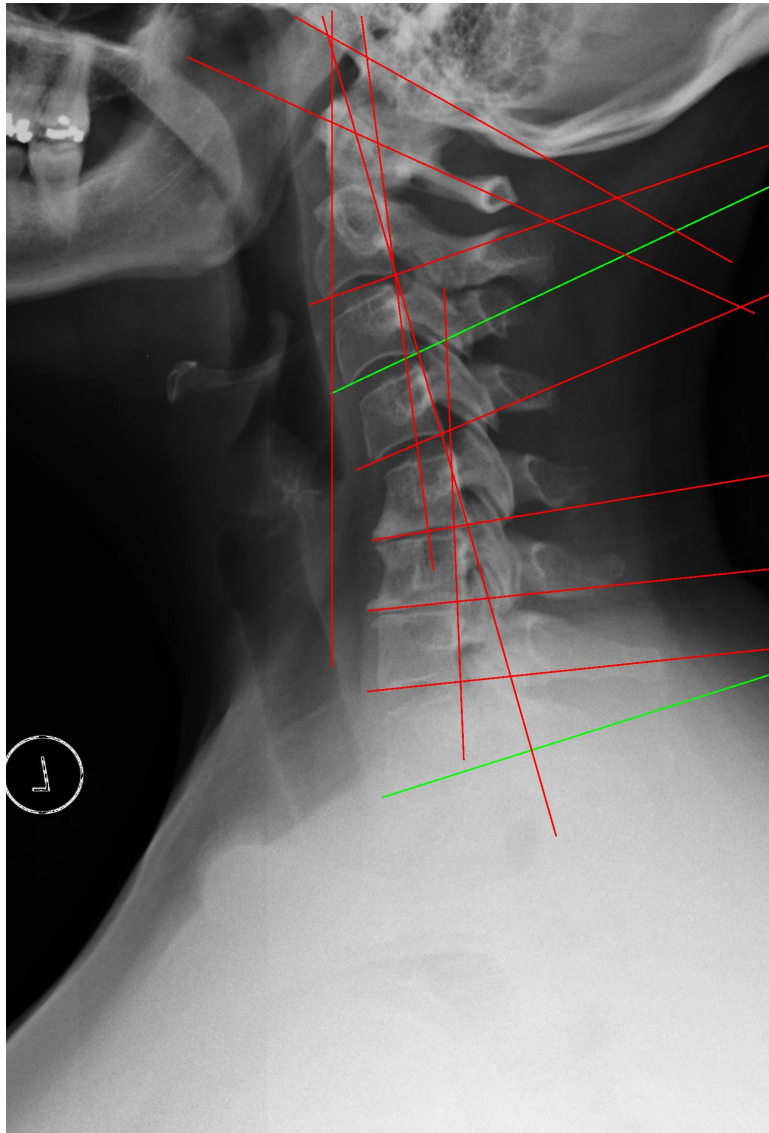
**Lateral Cervical Projection**

**Name: Bad Spine**  
**Date of Birth: 8/7/1954**

**X-Ray was obtained: 7/19/2019**

**Date of Digitization: 7/19/2019**

Mr. Bad Spine's x-rays were analyzed utilizing the PostureRay® computerized X-ray digitizing system with impressions interpreted by Dr. Joe Ferrantelli. X-Ray digitization for spinal biomechanics has been shown to be valid when compared to standard hand drawn methods. The patient's findings were then compared to established normals at each level and then globally.



**Anterior**

**Posterior**

The green line represents where the patient's neck is currently positioned.

The red line represents where the patient's neck is currently positioned with some abnormality.



## Radiographic Impression Report

## Lateral Cervical Projection

### Spinal Biomechanics Compared to Normal

Results	Normal Values	Patient Values	Difference From Normal
Disc Vertebra Height C2	~ 40.0%	<b>25.8%</b>	14.2%
Disc Vertebra Height C3	~ 40.0%	<b>25.0%</b>	15.0%
Disc Vertebra Height C4	~ 40.0%	<b>24.2%</b>	15.8%
Disc Vertebra Height C5	~ 40.0%	<b>12.1%</b>	27.9%
Disc Vertebra Height C6	~ 40.0%	<b>14.2%</b>	25.8%
Disc Vertebra Height C7	~ 40.0%	<b>25.8%</b>	14.2%
Translation C2-C3	< 3.5 mm	-2.2 mm	1.3 mm
Translation C3-C4	< 3.5 mm	0.2 mm	3.3 mm
Translation C4-C5	< 3.5 mm	2.0 mm	1.5 mm
Translation C5-C6	< 3.5 mm	1.1 mm	2.4 mm
Translation C6-C7	< 3.5 mm	-1.4 mm	2.1 mm
Translation C7-T1	< 3.5 mm	-1.6 mm	1.9 mm
GWL relative to Cervical pivot point.	0.0"	<b>(14.9mm)</b>	0.6"
C2 Vs Skull Base Line	18.0°	<b>36.7°</b>	18.7°
C2 Vs Atlas Plane Line	18.0°	<b>31.7°</b>	13.7°
Loss of Curve (Lordotic 8.6°, Kyphotic 13.6°)	0.0°	<b>214.0%</b>	214.0%
C2 Vs Gravitational Weight Line	82.0°	<b>70.9°</b>	11.1°
Stress Vertebra	C5	C2	n/a

GWL = Gravitational Weight Line

Direction of measured displacements are indicated using the right-hand Cartesian coordinate system method in biomechanics. Consequently a "-" negative sign preceding a measured value indicates posterior translation for linear movements; and a "-" preceding angular measurements indicate relative segmental or global extension rotational movement.

### Impressions and Assessment

As noted above in the table, Mr. Bad Spine has loss from normal lordosis by 214%. The patient has anterior Head Posture relative to the Cervical Pivot point of 0.6".

Disc thinning noted C5/6. Disc thinning noted C6/7. Negative for fracture. No other pathologic findings noted.



## Radiographic Impression Report

## Lateral Cervical Flexion/Extension

Name: Bad Spine

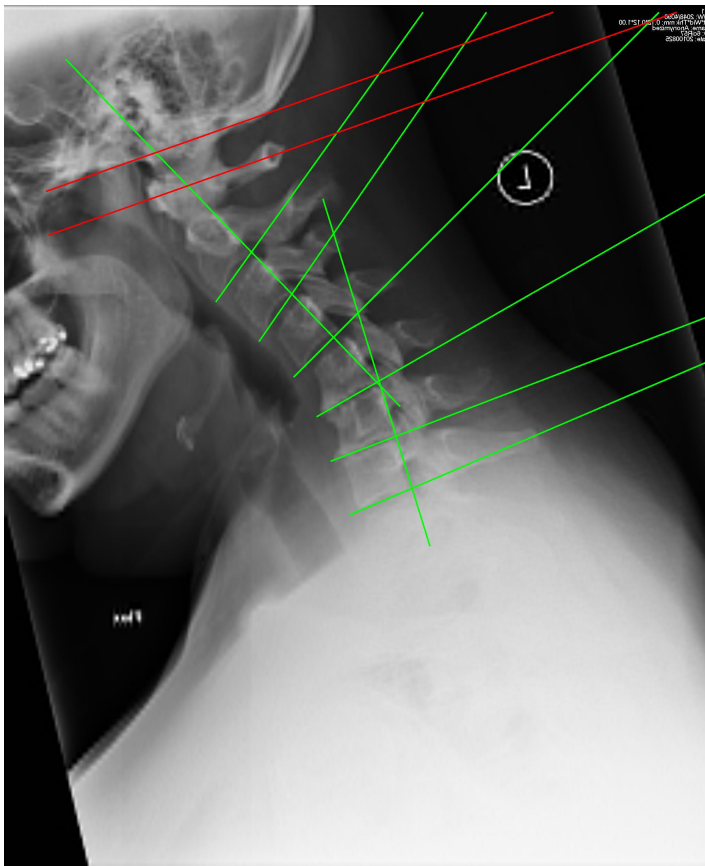
X-Ray was obtained: 7/19/2019

Date of Digitization: 7/19/2019

Date of Birth: 8/7/1954

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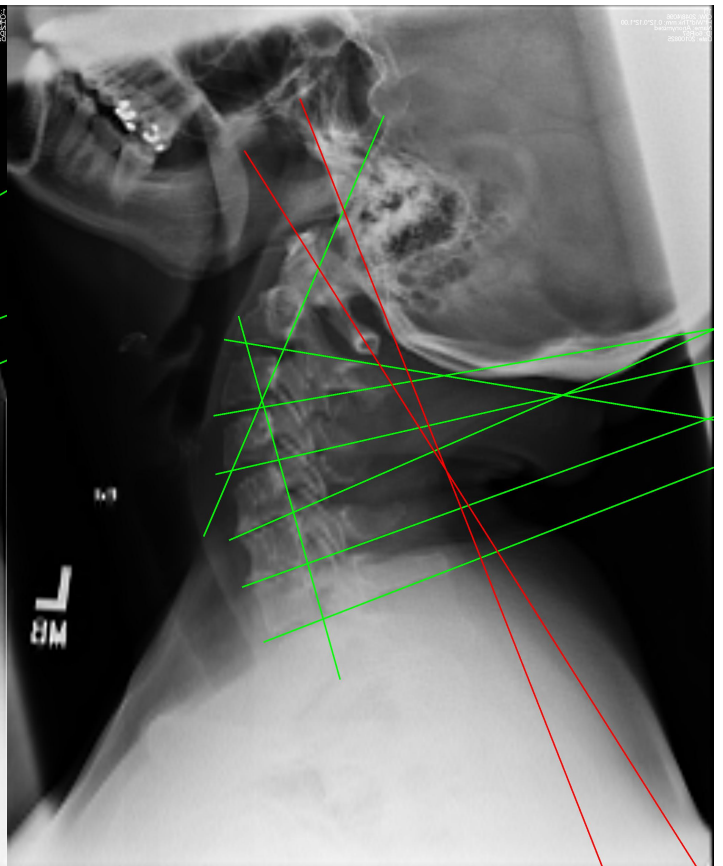
### Flexion



Anterior

PosteriorAnterior

### Extension



Posterior

This red line represents the path of the posterior longitudinal ligament and exceeds normal allowable segmental motion indicating ligament laxity.

This green line is the path of the posterior longitudinal ligament and appears to be stable with no significant ligamentous laxity.



## Radiographic Impression Report

## Lateral Cervical Flexion/Extension

### Flexion/Extension Values

Results	Normal Values	Flexion Values	Difference From Normal	Extension Values	Difference From Normal
Disc Vertebra Height C2	~ 40.0%	<b>25.6%</b>	14.4%	36.1%	3.9%
Disc Vertebra Height C3	~ 40.0%	<b>21.8%</b>	18.2%	<b>21.5%</b>	18.5%
Disc Vertebra Height C4	~ 40.0%	<b>20.5%</b>	19.5%	<b>23.4%</b>	16.6%
Disc Vertebra Height C5	~ 40.0%	<b>12.7%</b>	27.3%	<b>10.7%</b>	29.3%
Disc Vertebra Height C6	~ 40.0%	<b>7.3%</b>	32.7%	<b>9.2%</b>	30.8%
Translation C2-C3	< 3.5 mm	-1.2 mm	2.3 mm	-2.9 mm	0.6 mm
Translation C3-C4	< 3.5 mm	0.2 mm	3.3 mm	-2.7 mm	0.8 mm
Translation C4-C5	< 3.5 mm	0.4 mm	3.1 mm	-1.6 mm	1.9 mm
Translation C5-C6	< 3.5 mm	0.3 mm	3.2 mm	-0.1 mm	3.4 mm
Translation C6-C7	< 3.5 mm	0.0 mm	3.5 mm	0.4 mm	3.1 mm
Flexion Angle	60.0°	<b>26.8°</b>	33.2°	n/a	n/a
C2 Vs Skull Base Line	3.0°	<b>24.4°</b>	21.4°	n/a	n/a
C2 Vs Atlas Plane Line	10.5°	<b>24.3°</b>	13.8°	n/a	n/a
Extension Angle	70.0°	n/a	n/a	<b>38.8°</b>	31.2°
C2 Vs Skull Base Line	33.0°	n/a	n/a	<b>45.3°</b>	12.3°
C2 Vs Atlas Plane Line	25.5°	n/a	n/a	<b>34.5°</b>	9.0°

Direction of measured displacements are indicated using the right-hand Cartesian coordinate system method in biomechanics. Consequently a "-" negative sign preceding a measured value indicates posterior translation for linear movements; and a "-" preceding angular measurements indicate relative segmental or global extension rotational movement.

Upper Cervical Measurements - Flexion	Normal Values	Patient Values	Clinical Significance
C2 Vs Atlas Plane Line	10.5°	24.3°	Aberrant Motion is noted
C2 Vs Skull Base Line	3°	24.4°	Aberrant Motion is noted

WNL = Within Normal Levels

Upper Cervical Measurements - Extension	Normal Values	Patient Values	Clinical Significance
C2 Vs Atlas Plane Line	25.5°	34.5°	Aberrant Motion is noted
C2 Vs Skull Base Line	33°	45.3°	Aberrant Motion is noted

WNL = Within Normal Levels



## Radiographic Impression Report

## Lateral Cervical Flexion/Extension

### Impressions and Assessment

It appears that there is also ligamentous instability for flexion at C0-C1 with a value of 24.4° which differs from the normal value of 3.0°. Ligamentous instability is noted at C1-C2 with a measurement of 24.3° which differs from the normal value of 10.5°. This indicates probable sub-failure of the upper cervical ligaments.

It appears that there is also ligamentous instability for extension at C0-C1 with a value of 45.3° which differs from the normal value of 33.0°. Ligamentous instability is noted at C1-C2 with a measurement of 34.5° which differs from the normal value of 25.5°. This indicates probable sub-failure of the upper cervical ligaments.

**Flexion Impressions:** Very limited global ROM is noted with associated spinal coupling. No acute bony abnormalities or osseous disease.

**Extension Impressions:** Very limited global ROM is noted with associated spinal coupling most noted mid to lower cervical spine. I suspect delayed instability will appear once more normal global ROM is achieved.



## Radiographic Impression Report

**AP Open Mouth**

**Name: Bad Spine**  
**Date of Birth: 8/7/1954**

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**Right**

**Left**

The horizontal green line represents the normal atlas position. The vertical green line is a plumb line, also indicating normal vertical spinal alignment.

The horizontal red line represents the patient's Atlas vertebrae position. Ideally this should superimpose the green normal horizontal line. The red vertically oriented line should superimpose the true green vertical plumb line in spines with normal alignment.





## Radiographic Impression Report

AP Open Mouth

### Neutral Values

Global Analysis	Normal Values	Patient Values	Difference From Normal	Clinical Significance
C0-C1 Lat. Flex. Angle	0.0°	4.5°	4.5°	WNL
C1-C2 Lat. Flex. Angle	0.0°	0.5°	0.5°	WNL
C2-C3 Lat. Flex. Angle	0.0°	1.1°	1.1°	WNL
Left C1-C2 "overhang" margin	0.0 mm	right -0.3 mm	0.3 mm	WNL
Right C1-C2 "overhang" margin	0.0 mm	right -1.3 mm	1.3 mm	WNL

WNL = Within Normal Levels

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### Impressions and Assessment

As noted above in the table for the neutral position, Mr. Bad Spine has a 0.3 mm right shift of C1 relative to the lateral body margin of C2 on the left side. On the patient's right side, there is a 1.3 mm right shift of C1 relative to the lateral body margin of C2.

No acute bony abnormalities or osseous disease.





## Radiographic Impression Report

## Nasium Cervical/Thoracic Projection

Name: Bad Spine  
Date of Birth: 8/7/1954

X-Ray was obtained: 7/19/2019

Date of Digitization: 7/19/2019

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### Spinal Biomechanics Compared to Normal

Results	Normal Values	Patient Values	Difference From Normal
Para-Odontoid Space	1.7 mm	0.0 mm	1.7 mm
Upper Angle	0.0°	0.1°	0.1°
Lower Angle (SV: C5)	0.0°	3.3°	3.3°
CD Angle (SV: C5)	0.0 mm	3.0°	3.0°
DUD Angle (SV: C5)	0.0°	139.5°	139.5°
Meas. from mid-line	0.0 mm	605.4 mm	605.4 mm

CD Angle = the angle formed by C2 vs the Stress Vertebra vs T2.

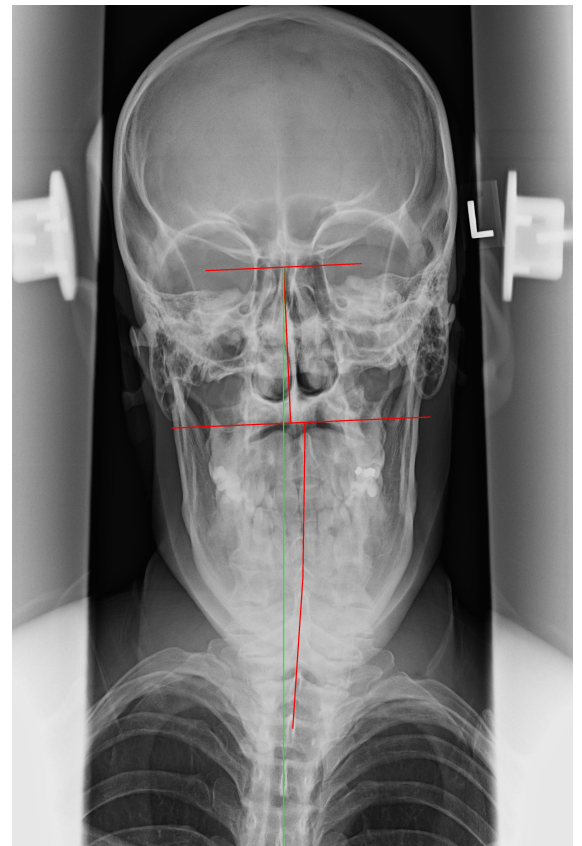
DUD Angle = the angle formed by the Stress Vertebra vs T2 vs T7.

Direction of measured displacements are indicated using the right-hand Cartesian coordinate system method in biomechanics. Consequently a "-" negative sign preceding a measured value indicates left translation for linear movements; and a "-" preceding angular measurements indicate relative segmental or global rotational movement to the left.

### Impressions and Assessment

As noted above in the table, Mr. Bad Spine appears to not have Alar Ligament instability as the Para-Odontoid Space doesn't exceed 1.7mm with a value of 0.0mm.

Mild degenerative changes noted at C1/C2/3. Dens and C1 appear unremarkable for bony abnormalities.



Right

Left

This green line represents normal spinal position.

The red line represents where the patient's neck is currently positioned.



## Radiographic Impression Report

## Lateral Thoracic Projection

**Name: Bad Spine**

**X-Ray was obtained: 7/19/2019**

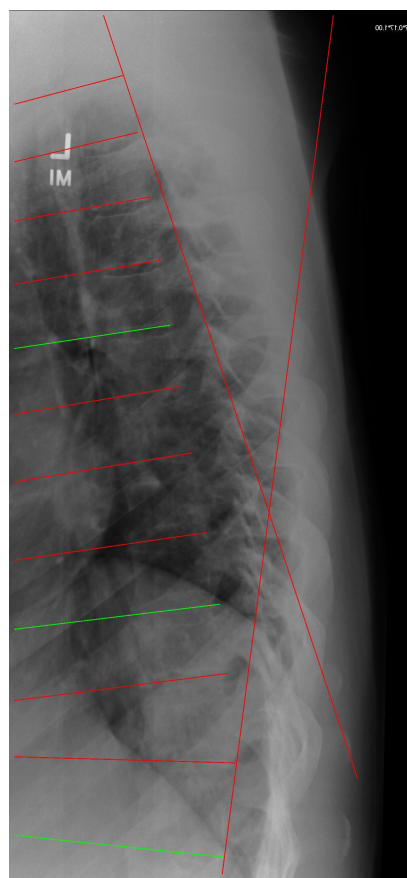
**Date of Digitization: 7/19/2019**

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### Spinal Biomechanics Compared to Normal

Results	Normal Values	Patient Values	Difference From Normal
Disc Vertebra Height T1	~ 20.0%	17.3%	2.7%
Disc Vertebra Height T2	~ 20.0%	17.7%	2.3%
Disc Vertebra Height T3	~ 20.0%	16.2%	3.8%
Disc Vertebra Height T4	~ 20.0%	<b>11.3%</b>	8.7%
Disc Vertebra Height T5	~ 20.0%	<b>10.5%</b>	9.5%
Disc Vertebra Height T6	~ 20.0%	<b>13.6%</b>	6.4%
Disc Vertebra Height T7	~ 20.0%	<b>13.8%</b>	6.2%
Disc Vertebra Height T8	~ 20.0%	<b>9.4%</b>	10.6%
Disc Vertebra Height T9	~ 20.0%	<b>12.5%</b>	7.5%
Disc Vertebra Height T10	~ 20.0%	<b>14.4%</b>	5.6%
Disc Vertebra Height T11	~ 20.0%	<b>9.3%</b>	10.7%
Translation T1-T2	< 2.5 mm	0.6 mm	1.9 mm
Translation T2-T3	< 2.5 mm	0.1 mm	2.4 mm
Translation T3-T4	< 2.5 mm	-0.3 mm	2.2 mm
Translation T4-T5	< 2.5 mm	0.0 mm	2.5 mm
Translation T5-T6	< 2.5 mm	0.8 mm	1.7 mm
Translation T6-T7	< 2.5 mm	0.8 mm	1.7 mm
Translation T7-T8	< 2.5 mm	1.0 mm	1.5 mm
Translation T8-T9	< 2.5 mm	0.5 mm	2.0 mm
Translation T9-T10	< 2.5 mm	0.2 mm	2.3 mm
Translation T10-T11	< 2.5 mm	1.2 mm	1.3 mm
Translation T11-T12	< 2.5 mm	0.2 mm	2.3 mm
Dorsal kyphosis T1-T12	45.0°	<b>25.8°</b>	19.2°
Dorsal kyphosis T4-T12	40.0°	<b>17.6°</b>	22.4°



**Anterior**

**Posterior**

The green line represents where the patient's mid back is currently positioned.

The red line represents where the patient's mid back is currently positioned with some abnormality.

Direction of measured displacements are indicated using the right-hand Cartesian coordinate system method in biomechanics. Consequently a "-" negative sign preceding a measured value indicates posterior translation for linear movements; and a "-" preceding angular measurements indicate relative segmental or global extension rotational movement.

### Impressions and Assessment

As noted above in the table, Mr. Bad Spine's T1-T12 dorsal kyphosis measures 25.8° and should be 45°. This represents a 42.7% decrease compared to normal. The T4-T12 dorsal kyphosis measures 17.6° and should be 40°. This represents a 56.0% decrease compared to normal.

No acute bony abnormalities or osseous disease. Mild diffuse degenerative changes are noted.



## Radiographic Impression Report

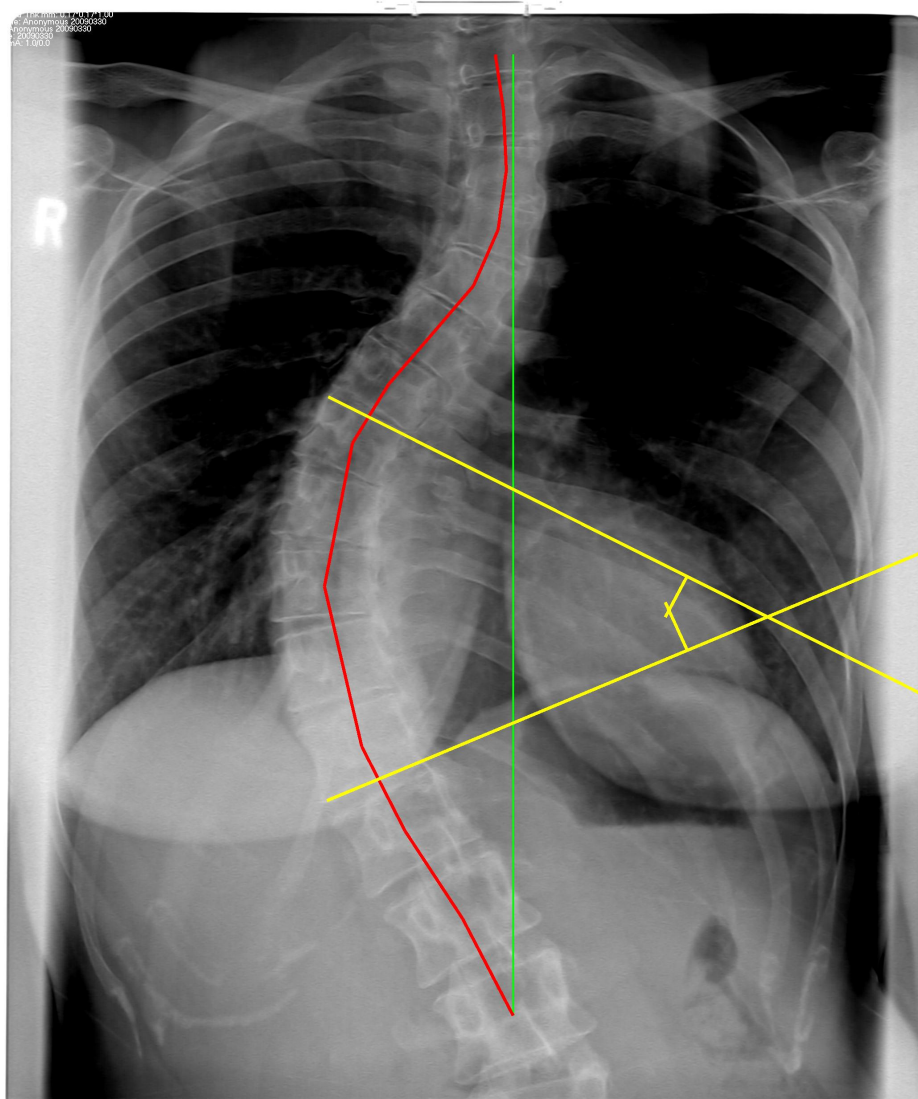
## AP Thoracic Scoliosis Projection

Name: Bad Spine  
Date of Birth: 8/7/1954

X-Ray was obtained: 7/19/2019

Date of Digitization: 7/19/2019

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Right

Left

This green line represents normal spinal position.

This red line represents the patient's alignment and the projected centers of mass of the spine.

Cobb Lines for the Cobb Method of analysis



## Radiographic Impression Report

## AP Thoracic Scoliosis Projection

### Spinal Biomechanics Compared to Normal

Global Analysis	Normal Values	Patient Values	Difference From Normal
Risser-Ferguson Angle T8-T12 (T10)	0.0°	-24.2°	24.2°
Cobb Angle T8-T12	0.0°	-49.2°	49.2°
Translation at Apex T8-T12 (T10)	0.0 mm	-14.4 mm	14.4 mm
Translation T8-T12	0.0 mm	-3.6 mm	3.6 mm
Translation T1-L3	0.0 mm	-7.3 mm	7.3 mm
Clavicular angle to horizontal	0.0°	Not Digitized	Not Digitized

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Mr. Bad Spine has a 1 curve scoliosis at T8-T12 with the apex on the right at T10. Using the Risser-Ferguson method of analysis, Mr. Bad Spine's scoliosis measures -24.2 degrees (moderate), and using the Cobb method of analysis measures -49.2 degrees (severe).

No acute bony abnormalities or osseous disease. Mild diffuse degenerative changes are noted. Scoliosis as noted.



## Radiographic Impression Report

## Lateral Lumbar Projection

**Name: Bad Spine**

**X-Ray was obtained: 7/19/2019**

**Date of Digitization: 7/19/2019**

**Date of Birth: 8/7/1954**

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### Spinal Biomechanics Compared to Normal

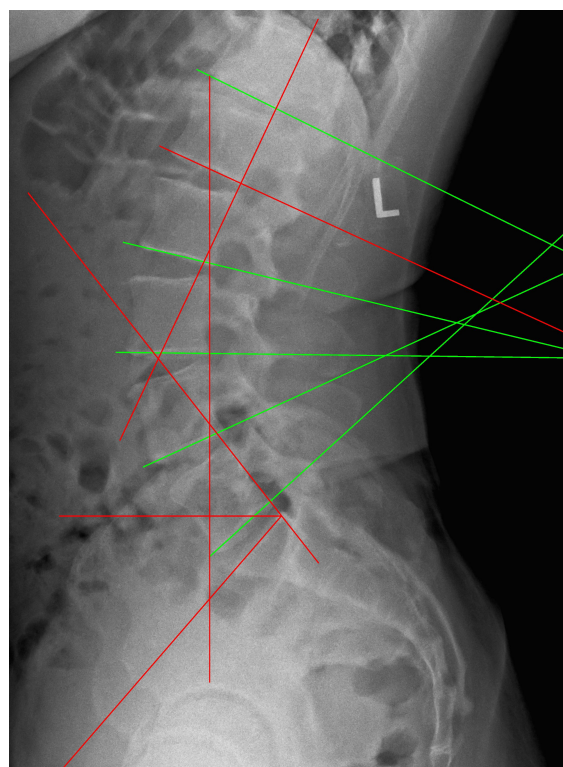
Results	Normal Values	Patient Values	Difference From Normal
Disc Vertebra Height T12	~ 33.0%	<b>20.9%</b>	12.1%
Disc Vertebra Height L1	~ 33.0%	27.9%	5.1%
Disc Vertebra Height L2	~ 33.0%	33.6%	0.6%
Disc Vertebra Height L3	~ 33.0%	29.7%	3.3%
Disc Vertebra Height L4	~ 33.0%	34.5%	1.5%
Disc Vertebra Height L5	~ 33.0%	31.5%	1.5%
Disc Vertebra Height L6	~ 33.0%	Not Digitized	Not Digitized
Translation T12-L1	< 4.5 mm	0.2 mm	4.3 mm
Translation L1-L2	< 4.5 mm	-1.9 mm	2.6 mm
Translation L2-L3	< 4.5 mm	-1.7 mm	2.8 mm
Translation L3-L4	< 4.5 mm	0.2 mm	4.3 mm
Translation L4-L5	< 4.5 mm	-3.1 mm	1.4 mm
Translation L5-L6	< 4.5 mm	Not Digitized	Not Digitized
Translation L6-S1	< 4.5 mm	Not Digitized	Not Digitized
Translation L5-S1	< 4.5 mm	-1.7 mm	2.8 mm
GWL rel. to Lumbar pivot point	0.0"	<b>(13.5" mm)</b>	0.5"
Loss of Curve (Hyperlordotic 63.4°)	0.0°	<b>-80.0%</b>	80.0%
Ferguson's angle	31.0°	<b>49.1°</b>	18.1°
Stress Vertebra	L3	L3	n/a

GWL = Gravitational Weight Line  
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### Impressions and Assessment

As noted above in the table, Mr. Bad Spine has hyperlordosis of - 80%. The patient has anterior Lower Back Posture relative to the Lumbar Pivot point of 0.5".

No acute bony abnormalities or osseous disease.



**Anterior**

**Posterior**

The green line represents where the patient's lower back is currently positioned.

The red line represents where the patient's lower back is currently positioned with some abnormality.





## Radiographic Impression Report

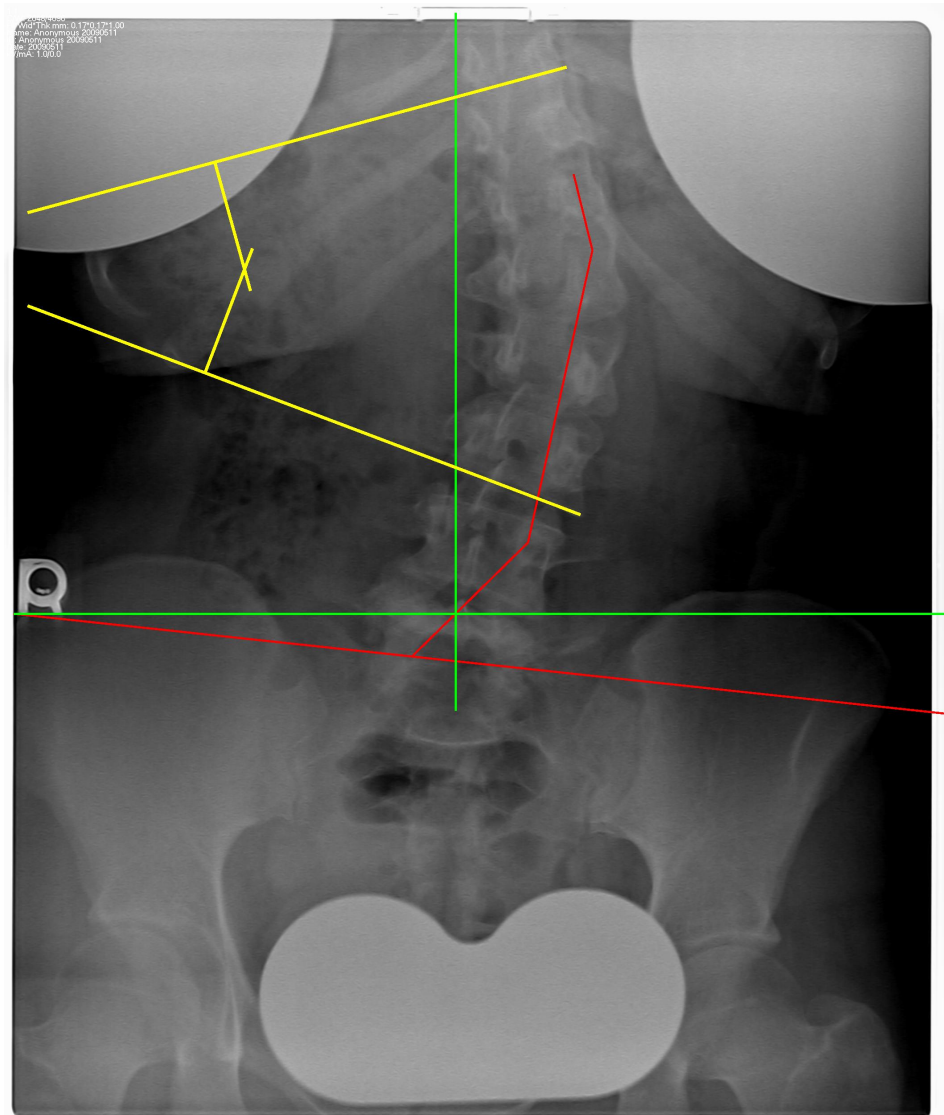
## AP Lumbar Scoliosis Projection

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Right

Left

This green line represents normal spinal position.

This red line represents the patient's alignment and the projected centers of mass of the spine.

Cobb Lines for the Cobb Method of analysis



## Radiographic Impression Report

## AP Lumbar Scoliosis Projection

### Spinal Biomechanics Compared to Normal

Global Analysis	Normal Values	Patient Values	Difference From Normal
Hip Rotation	0.0°	6.1°	6.1°
Lumbo-Sacral Angle (SV: L3)	90.0°	39.3°	50.7°
Lumbar-Dorsal Angle (SV: L3)	0.0°	33.0°	33.0°
Dorsal Lower Dorsal (SV: L3)	0.0°	Not Digitized	Not Digitized
Translation from plumb	0.0 mm	Not Digitized	Not Digitized
Risser-Ferguson Angle T11-L3 (L1)	0.0°	21.0°	21.0°
Cobb Angle T11-L3	0.0°	35.9°	35.9°
Translation at Apex T11-L3 (L1)	0.0 mm	11.6 mm	11.6 mm
Translation T11-L3	0.0 mm	-0.6 mm	0.6 mm

SV = Stress Vertebra

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Mr. Bad Spine has a 1 curve scoliosis at T11-L3 with the apex on the left at L1. Using the Risser-Ferguson method of analysis, Mr. Bad Spine's scoliosis measures 21.0 degrees (moderate), and using the Cobb method of analysis measures 35.9 degrees (moderate). Using the modified Risser-Ferguson method the AP lumbar x-ray reveals a left sacral base line of 6.1° (on the LS angle side). There is a left lumbo-sacral angle of 39.3° and a right lumbo-dorsal angle of 33.0°. This indicates that the left side of the sacrum is tilted inferior. This is indicative of abnormal rotation and movement of the sacrum.

Mild diffuse degenerative changes are noted. No acute bony abnormalities or osseous disease.





Radiographic Impression Report

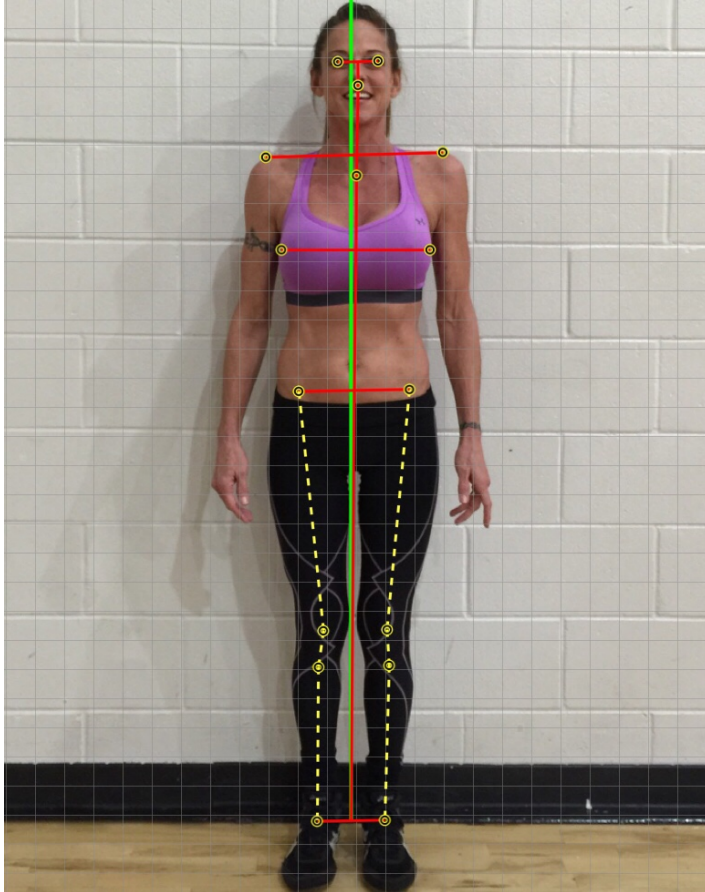
Other View - PA Back Posture

Name: Bad Spine  
Date of Birth: 8/7/1954

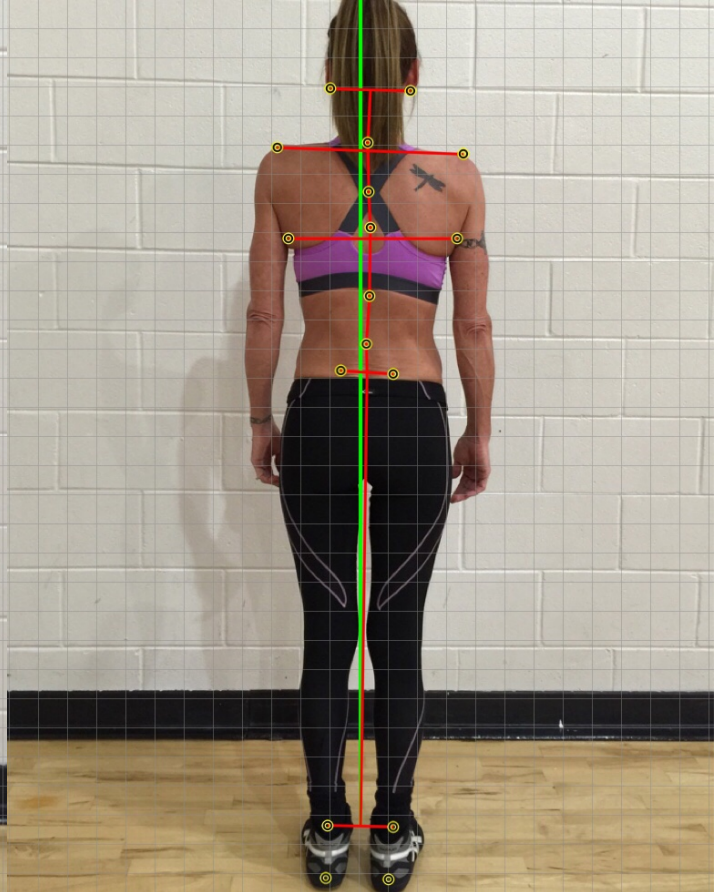
X-Ray was obtained: 7/19/2019

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AP Front Posture



PA Back Posture





Radiographic Impression Report

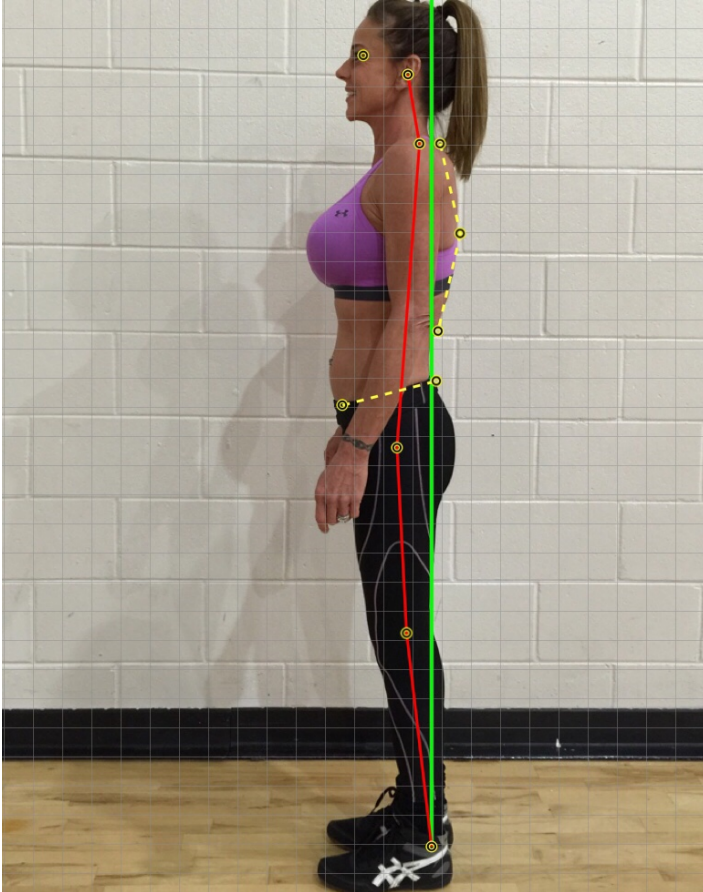
Other View - Right Lateral Posture

Name: Bad Spine  
Date of Birth: 8/7/1954

X-Ray was obtained: 7/19/2019

Date of Digitization: 7/19/2019

Left Lateral Posture



Right Lateral Posture

