

OKI Lab

123 Birch Ave Austin TX 78746 1231231321

Patient Name: Steve, Spondy
DOB: 03/03/1982
Date of Imaging: 6/21/2016
Referring Physician: Doctor Demo

Lumbar Spine Motion X-ray Report

Technique

Patient was referred for Vertebral Motion Analysis (VMA) testing to assess for potential lumbar radiographic instability. The purpose of the test is to evaluate ligament injury by alteration of motion segment integrity (AOMSI) documenting increased translational or angular motion per DRE category: (5th Ed AMA p.384).

VMA testing was conducted, which involves the use of FDA-cleared software to measure the relative motion of vertebral bodies on radiographic images acquired during patient bending of the lumbar spine. VMA software is intended to assist physicians and clinical professionals in the analysis of vertebral body motion in musculoskeletal images of the spine, and permits users to generate a 'motion analysis' report containing graphics, charts, and text. VMA measurements of intervertebral angulation and translation have been validated to be more accurate and precise as compared to standard methods for taking these measurements.

Subsequent radiological interpretation of images and processed results was performed to assess for the presence of potential radiographic instability.

Findings

L1/L2: The maximum translation at this level was 5.1mm (14% of vertebral body depth), this is evidence of translational instability according to the medical literature. The maximum angular motion at this level was 15 degrees. This angulation measurement exceeds the threshold for AOMSI of 15 degrees, the measurement for translation exceeds the threshold for AOMSI of 4.5 mm, each of these therefore demonstrating evidence of radiographic instability and ligamentous injury.

L2/L3: Maximum translation was 3mm (8% of vertebral body depth). The maximum angular motion at this level was 16 degrees. This angulation measurement exceeds the threshold for AOMSI of 15 degrees, therefore demonstrating evidence of radiographic instability and ligamentous injury.

L3/L4: Maximum translation was 3.2mm (9% of vertebral body depth). The maximum angular motion at this level was 12 degrees. These values do not exceed any thresholds for AOMSI as referenced above.

L4/L5: Maximum translation was 3.6mm (10% of vertebral body depth). The maximum angular motion at this

level was 16 degrees. These values do not exceed any thresholds for AOMSI as referenced above.

L5/S1:Maximum translation was 7.4mm (20% of vertebral body depth). The maximum angular motion at this level was 7 degrees. This measurement for translation exceeds the threshold for AOMSI of 4.5 mm, therefore demonstrating **evidence of radiographic instability and ligamentous injury.**

Impression

Evidence of radiographic instability and ligamentous injury is demonstrated. Loss of motion segment integrity due to excessive intervertebral translation is confirmed at L1/L2 by the measured value of 5.1 millimeters (14%) of relative motion, which exceeds the threshold for impairment of the Lumbar spine as specified in the AMA Guides (Fifth Edition, 2000) and is consistent with a whole person impairment of rating of 20% to 23%. **Evidence of radiographic instability and ligamentous injury is demonstrated.** Loss of motion segment integrity due to excessive intervertebral angulation is confirmed at L1/L2 by the measured value of 15 degrees of relative motion, which exceeds the threshold for impairment of the Lumbar spine as specified in the AMA Guides (Fifth Edition, 2000) and is consistent with a whole person impairment of rating of 20% to 23%.

Evidence of radiographic instability and ligamentous injury is demonstrated. Loss of motion segment integrity due to excessive intervertebral angulation is confirmed at L2/L3 by the measured value of 16 degrees of relative motion, which exceeds the threshold for impairment of the Lumbar spine as specified in the AMA Guides (Fifth Edition, 2000) and is consistent with a whole person impairment of rating of 20% to 23%.

Evidence of radiographic instability and ligamentous injury is demonstrated. Loss of motion segment integrity due to excessive intervertebral translation is confirmed at L5/S1 by the measured value of 7.4 millimeters (20%) of relative motion, which exceeds the threshold for impairment of the Lumbar spine as specified in the AMA Guides (Fifth Edition, 2000) and is consistent with a whole person impairment of rating of 20% to 23%.

Signed by: Doctor Demo, on 11/15/2016 at 9:38 AM CST

Vertebral Motion Analysis™ Lumbar Report

PATIENT: **Steve, Spondy** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**

INDEX OF RESULTS

REPORTS PAGE#

Lumbar Motion Analysis Summary	2
Lumbar Sagittal Alignment	3
Lumbar Translation Summary	4
Lumbar Angulation (ROM): Flexion/Extension	5
Lumbar Angulation (ROM): Left/Right	6
Lumbar Alert Thresholds	7
Lumbar Report Endnotes	8







⚠ WARNING: Inadequate tracking of vertebral bodies across radiographic images can lead to erroneous results. Image data and template placement must be reviewed prior to accepting any measurement results. If any templates are found to be incorrectly placed on vertebral bodies, any associated measurements should not be utilized in clinical decision making.








⚠ WARNING: When being viewed on a computer, a diagnostic-quality image review workstation should be used

VMA™ Report Lumbar Motion Analysis Summary

PATIENT: **Steve, Spody** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
 ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**

PATIENT LEVEL ALERTS:
 E.R.L.

	MAX TRANSLATION ¹				MAX ANGULATION ³				DISC HEIGHT ⁴		INSTRUMENTED LEVELS ⁵	
	IN ANY VIEW ¹		CHANGE BETWEEN VIEWS ²		FLEX/EXT		LEFT/RIGHT		CENTERLINE		MAX. CONFIRMABLE ANGULATION	
L1/L2	-2.7 mm -7%	CLE	 5.1 mm 14%	USN-CLE	 15°	CS	13°	US	 4.9 mm		n/r	
L2/L3	-3.0 mm -8%	CSE	3.0 mm 8%	CSN-CLF	 16°	CS	16°	US	9.0 mm		n/r	
L3/L4	-3.2 mm -9%	CSN	2.7 mm 7%	CSN-CSF	12°	CL	12°	CS	9.9 mm		n/r	
L4/L5	-3.6 mm -10%	CSE	2.3 mm 5%	XTS-CLF	16°	CL	8°	CL	13.1 mm		n/r	
L5/S1	7.4 mm 20%	USF	 4.2 mm 11%	USF-CLF	7°	CS	 2°	CS	7.6 mm		n/r	


KEY:  Potential mal-alignment or excessive motion*  Potential borderline mal-alignment or excessive motion*  Potential residual motion at a fusion level  Potential reduced overall lumbar mobility  Potential reduced disc height  Potential sagittal alignment issue  Change in VAS (pain) during bending

*NOTE: The letters 'FN' appearing within these alert icons indicates an alert that was triggered only in the device assisted bending images. If only uncontrolled bending images had been consulted, a potential "false negative" result for the underlying anomaly would have occurred.

FIRST LETTER: Controlled (C) vs. Uncontrolled (U) bending. SECOND LETTER: Standing (S) vs. Lying (L) bending. THIRD LETTER: Flexion (F), Extension (E), Patient Left (L), Patient Right (R), or Neutral (N) view. XTP = Cross table prone. XTS = Cross table supine. LTM = Less than minimum motion threshold. See *Quantitative Definitions* page of this report package for further definition and reference thresholds. See *Endnotes* page for all footnotes.



VMA™ Report Lumbar Sagittal Alignment

PATIENT: **Steve, Spody** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
 ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**

	LORDOSIS ANGLE ¹⁵			DISC HEIGHT ⁴		
	MAX. FLEX*	STANDING NEUTRAL	MAX. EXT*	ANTERIOR	CENTERLINE	POSTERIOR
L1/L2	-3°	8°	N/R	7.3 mm	 4.9 mm	3.4 mm
L2/L3	-2°	10°	13°	12.3 mm	9.0 mm	5.9 mm
L3/L4	1°	11°	14°	13.7 mm	9.9 mm	6.2 mm
L4/L5	0°	16°	22°	18.4 mm	13.1 mm	8.0 mm
L5/S1	-3°	0°	4°	7.8 mm	7.6 mm	7.4 mm

SAGITTAL ALIGNMENT DATA¹³

PI - LL = 4°

KEY:  Potential reduced disc height  Potential sagittal alignment issue

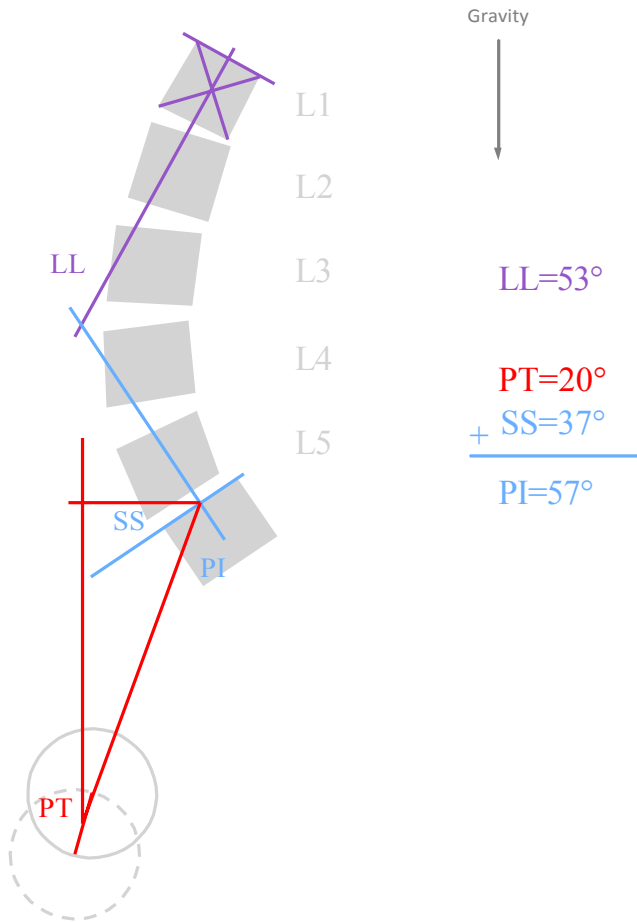
PI = pelvic incidence.
 PT = pelvic tilt. SS = sacral slope.
 LL = lumbar lordosis.

*NOTE: The letters 'FN' appearing within these alert icons indicates an alert that was triggered only in the device assisted bending images. If only uncontrolled bending images had been consulted, a potential "false negative" result for the underlying anomaly would have occurred.

Positive values (+) indicate extension intervertebral endplate angles. Negative values (-) indicate flexion intervertebral endplate angles.

FIRST LETTER: Controlled (C) vs. Uncontrolled (U) bending. **SECOND LETTER:** Standing (S) vs. Lying (L) bending. **THIRD LETTER:** Flexion (F), Extension (E), Patient Left (L), Patient Right (R), or Neutral (N) view. XTP = Cross table prone. XTS = Cross table supine. LTM = Less than minimum motion threshold. See Quantitative Definitions page of this report package for further definition and reference thresholds. See Endnotes page for all footnotes.

SAGITTAL ALIGNMENT MEASURES



VMA Version:
 2.3.1008/2.3.231.0
 V 2.3.106
 Report regenerated on
 8/10/2016 8:27:21 AM CST

VMA™ Report Lumbar Translation Summary

PATIENT: **Steve, Spody** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
 ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**

TRANSLATION¹⁴ DURING CONTROLLED BENDING

TRANSLATION¹⁴ DURING UNCONTROLLED BENDING

	STANDING			LYING			STANDING			LYING NEUTRAL	
	NEUTRAL	FLEXION	EXTENSION	NEUTRAL	FLEXION	EXTENSION	NEUTRAL	FLEXION	EXTENSION	SUPINE	PRONE
L1/L2	-1.0 mm -3% <small>LTM</small>	-0.1 mm 0% <small>LTM</small>	-2.0 mm -5% 	-2.2 mm -6% <small>LTM</small>	-0.3 mm -1% <small>LTM</small>	-2.7 mm -7% 	2.4 mm 7%	-0.4 mm -1% <small>LTM</small>	-2.3 mm -6%	n/a	n/a
L2/L3	-3.0 mm -8% <small>LTM</small>	-0.1 mm 0% <small>LTM</small>	-3.0 mm -8%	-1.2 mm -3% <small>LTM</small>	0.0 mm 0% <small>LTM</small>	-2.1 mm -6%	-2.9 mm -8% <small>LTM</small>	-1.0 mm -3% <small>LTM</small>	-2.0 mm -6%	n/a	n/a
L3/L4	-3.2 mm -9% <small>LTM</small>	-0.5 mm -2% <small>LTM</small>	-3.0 mm -8%	-2.1 mm -6% <small>LTM</small>	-1.4 mm -4% <small>LTM</small>	-3.0 mm -9%	-2.0 mm -6% <small>LTM</small>	-0.8 mm -2% <small>LTM</small>	-2.9 mm -8%	n/a	n/a
L4/L5	-3.6 mm -10%	-3.1 mm -8%	-3.6 mm -10%	-2.1 mm -6%	-1.3 mm -4% <small>LTM</small>	-2.9 mm -8%	-2.8 mm -8%	-3.1 mm -8%	-3.5 mm -9%	-3.6 mm -9%	n/a
L5/S1	5.2 mm 14%	7.4 mm 20%	4.8 mm 13%	5.1 mm 14%	3.2 mm 9%	4.7 mm 13%	4.5 mm 12%	7.4 mm 20%	n/a	5.2 mm 14%	n/a


KEY: Potential mal-alignment or excessive motion* Potential borderline mal-alignment or excessive motion* Potential residual motion at a fusion level Potential reduced overall lumbar mobility Potential reduced disc height Potential sagittal alignment issue Change in VAS (pain) during bending

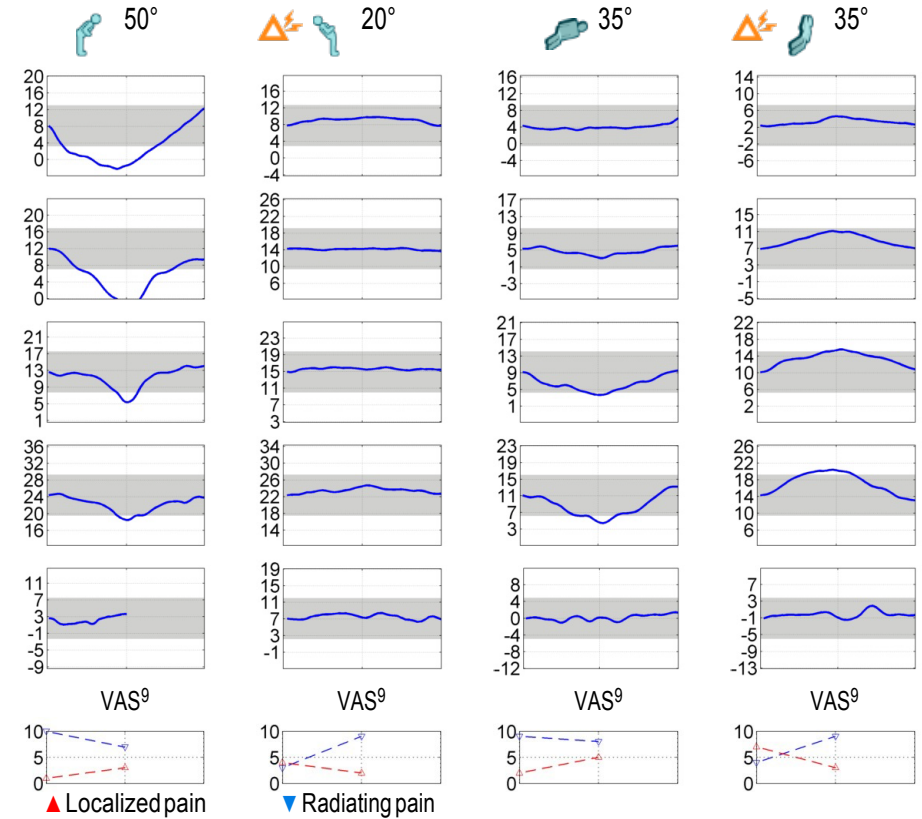
*NOTE: The letters 'FN' appearing within these alert icons indicates an alert that was triggered only in the device assisted bending images. If only uncontrolled bending images had been consulted, a potential "false negative" result for the underlying anomaly would have occurred.

FIRST LETTER: Controlled (C) vs. Uncontrolled (U) bending. SECOND LETTER: Standing (S) vs. Lying (L) bending. THIRD LETTER: Flexion (F), Extension (E), Patient Left (L), Patient Right (R), or Neutral (N) view. XTP = Cross table prone. XTS = Cross table supine. LTM = Less than minimum motion threshold. See *Quantitative Definitions* page of this report package for further definition and reference thresholds. See *Endnotes* page for all footnotes.


VMA™ Report Lumbar Angulation (ROM) Flexion/Extension


PATIENT: **Steve, Spody** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
 ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**


	ROM CONTROLLED BENDING ⁶ STANDING	ROM CONTROLLED BENDING ⁶ LYING	ROM UNCONTROLLED BENDING ⁷	FUSION LEVELS: MAXIMUM ROM ⁵
L1/L2	15°	4° <small>LTM</small>	7°	n/r
L2/L3	 16°	8°	7°	n/r
L3/L4	11°	12°	3° <small>LTM</small>	n/r
L4/L5	6°	16°	7°	n/r
L5/S1	7°	3° <small>LTM</small>	n/a	n/r
OVERALL MOBILITY ⁸	46° L1-S1	37° L1-S1	n/r	



KEY:  Potential mal-alignment or excessive motion


 Potential borderline mal-alignment or excessive motion*

 Potential residual motion at a fusion level

 Potential reduced overall lumbar mobility

 Potential reduced disc height

 Potential sagittal alignment issue

 Change in VAS (pain) during bending

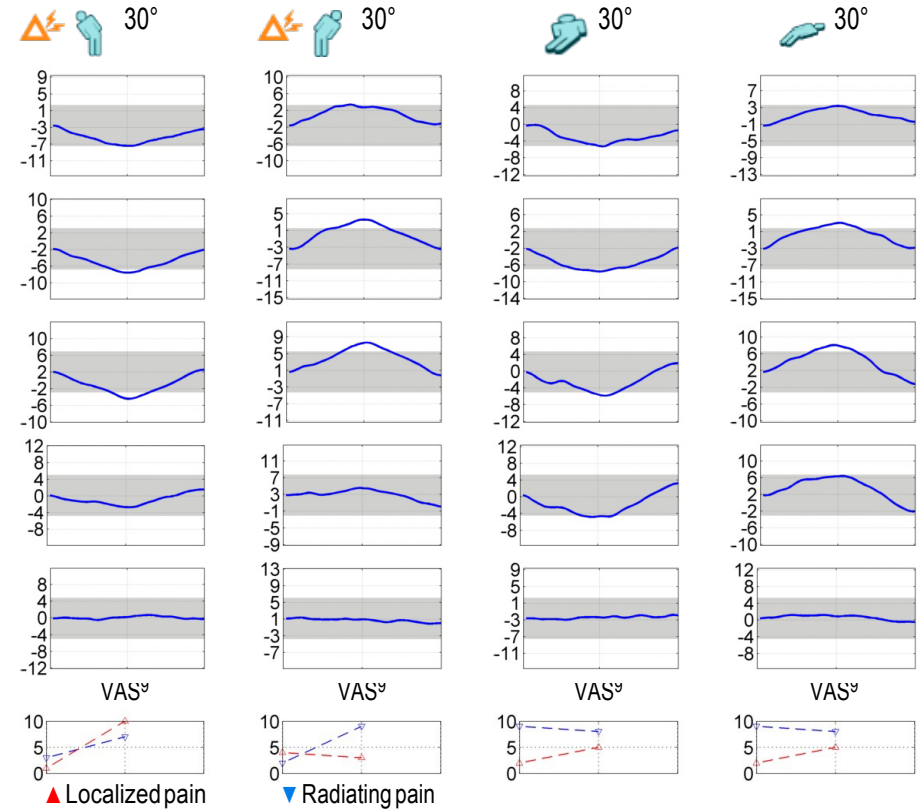
*NOTE: The letters 'FN' appearing within these alert icons indicates an alert that was triggered only in the device assisted bending images. If only uncontrolled bending images had been consulted, a potential "false negative" result for the underlying anomaly would have occurred.

FIRST LETTER: Controlled (C) vs. Uncontrolled (U) bending. SECOND LETTER: Standing (S) vs. Lying (L) bending. THIRD LETTER: Flexion (F), Extension (E), Patient Left (L), Patient Right (R), or Neutral (N) view. XTP = Cross table prone. XTS = Cross table supine. LTM = Less than minimum motion threshold. See *Quantitative Definitions* page of this report package for further definition and reference thresholds. See *Endnotes* page for all footnotes.

VMA™ Report Lumbar Angulation (ROM) Left/Right

PATIENT: **Steve, Spody** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
 ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**

	ROM CONTROLLED BENDING ¹⁰ STANDING	ROM CONTROLLED BENDING ¹⁰ LYING	ROM UNCONTROLLED BENDING ¹¹	FUSION LEVELS: MAXIMUM ROM ⁵
L1/L2	11°	5°	13°	n/r
L2/L3	11°	6°	16°	n/r
L3/L4	12°	8°	10°	n/r
L4/L5	7°	8°	0°	n/r
L5/S1	2°	1°	2°	n/r
OVERALL MOBILITY ¹²	41° L1-S1	47° L1-S1	41° L1-S1	



KEY: Potential mal-alignment or excessive motion* Potential borderline mal-alignment or excessive motion* Potential residual motion at a fusion level Potential reduced overall lumbar mobility Potential reduced disc height Potential sagittal alignment issue Change in VAS (pain) during bending

*NOTE: The letters 'FN' appearing within these alert icons indicates an alert that was triggered only in the device assisted bending images. If only uncontrolled bending images had been consulted, a potential "false negative" result for the underlying anomaly would have occurred.

FIRST LETTER: Controlled (C) vs. Uncontrolled (U) bending. SECOND LETTER: Standing (S) vs. Lying (L) bending. THIRD LETTER: Flexion (F), Extension (E), Patient Left (L), Patient Right (R), or Neutral (N) view. XTP = Cross table prone. XTS = Cross table supine. LTM = Less than minimum motion threshold. See *Quantitative Definitions* page of this report package for further definition and reference thresholds. See *Endnotes* page for all footnotes.

VMA™ Report Lumbar Alert Thresholds

PATIENT: **Steve, Spondy** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
 ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKILab**

A. EXCESSIVE TRANSLATION BETWEEN VIEWS

	UNITS	▲ BORDERLINE	● NON-BORDERLINE
L1/L2	%	$12 \leq X < 13.5$	$X \geq 13.5$
	mm	$4 \leq X < 4.5$	$X \geq 4.5$
L2/L3	%	$12 \leq X < 13.5$	$X \geq 13.5$
	mm	$4 \leq X < 4.5$	$X \geq 4.5$
L3/L4	%	$12 \leq X < 13.5$	$X \geq 13.5$
	mm	$4 \leq X < 4.5$	$X \geq 4.5$
L4/L5	%	$12 \leq X < 13.5$	$X \geq 13.5$
	mm	$4 \leq X < 4.5$	$X \geq 4.5$
L5/S1	%	$12 \leq X < 13.5$	$X \geq 13.5$
	mm	$4 \leq X < 4.5$	$X \geq 4.5$

B. EXCESSIVE ANGULATION: MAXIMUM DIFFERENCE BETWEEN VIEWS

	UNITS	▲ BORDERLINE	● NON-BORDERLINE
L1/L2	Deg.	$15^\circ \leq X < 22^\circ$	$X \geq 22^\circ$
L2/L3	Deg.	$15^\circ \leq X < 22^\circ$	$X \geq 22^\circ$
L3/L4	Deg.	$15^\circ \leq X < 22^\circ$	$X \geq 22^\circ$
L4/L5	Deg.	$20^\circ \leq X < 22^\circ$	$X \geq 22^\circ$
L5/S1	Deg.	$22^\circ \leq X < 26^\circ$	$X \geq 26^\circ$

C. MAL-ALIGNMENT* (LISTHESIS)

	UNITS	▲ BORDERLINE	● NON-BORDERLINE
L1/L2	%	$13 \leq X < 25$	$25 \leq X$
	mm	$4.4 \leq X < 8.3$	$8.3 \leq X$
L2/L3	%	$13 \leq X < 25$	$25 \leq X$
	mm	$4.4 \leq X < 8.3$	$8.3 \leq X$
L3/L4	%	$13 \leq X < 25$	$25 \leq X$
	mm	$4.4 \leq X < 8.3$	$8.3 \leq X$
L4/L5	%	$13 \leq X < 25$	$25 \leq X$
	mm	$4.4 \leq X < 8.3$	$8.3 \leq X$
L5/S1	%	$13 \leq X < 25$	$25 \leq X$
	mm	$4.4 \leq X < 8.3$	$8.3 \leq X$

D. MISCELLANEOUS ALERTS

THRESHOLD TYPE	ALERT LEVEL
✚ Reduced Disc Height	5
▸ Reduced Range of Motion (L1/S1)	26
⚠ Sagittal Alignment (PI-LL)	10
🚨 Residual Motion at Fused Level	ON
False Negative Notification	ON

E. LUMBAR CHANGE IN PAIN (VAS)

THRESHOLD TYPE	ALERT LEVEL
Local Pain Change Threshold	$ \Delta VAS > 4$
Radiating Pain Change Threshold	$ \Delta VAS > 4$
Alert requires Change in Both - Local AND Radiating Change in only one - Local OR Radiating	OR
Alert triggered when change in pain from Neutral Posture is INCREASING, DECREASING, or BOTH	Both

F. LESS THAN MINIMUM MOTION THRESHOLD (LTM)

THRESHOLD TYPE	LTM THRESHOLD
Uncontrolled Angulation LTM (deg.)	$x < 5^\circ$
Controlled Angulation LTM (deg.)	$x < 5^\circ$
Subluxation LTM (%)	$x < 5\%$
Instability LTM (%)	$x < 5\%$

***NOTE:** Mal-alignment (listhesis) and excessive translation between views (instability) alerts are triggered if a patient's measure value exceeds either the mm or % value. % is percent of inferior vertebral body sagittal plane depth.

THRESHOLDS WERE CONFIGURED BY: DEMO, DOCTOR

VMA™ Report Lumbar Report Endnotes

PATIENT: **Steve, Spody** PATIENT ID: **1563124** DOB: **03/03/1982** STUDY DATE: **6/21/2016**
ACCESSION No: **19820303** PRESCRIBING PHYSICIAN: **Demo, Doctor** TEST CENTER: **OKI Lab**

1. Maximum translation values In Any View are measured across all sagittal plane views. Translation is measured using the Meyerding method, and provided in millimeter units [if possible], and also as percent of the inferior vertebral body sagittal-plane depth. Negative values refer to retrolisthesis, positive values refer to spondylolisthesis. Subscripts may accompany these values, and when present refer to the specific view(s) from which the maximum translation values were observed (see KEY on page). Values are only returned for non-fusion levels and only for lateral-view images (i.e. only for flexion extension bending).
2. Change Between Views values represent the maximum pairwise difference in translation for all image pairs possible within the set of up to 11 images (as shown on page), measured in the same millimeters and percent vertebral body depth units as described in (1) above. Subscripts refer to the specific view(s) from which the maximum translation values were observed (see KEY on page). Values are only returned for non-fusion levels and only for lateral-view images of flexion/extension bending (i.e. no measurements made from AP-view images of left/right bending).
3. Maximum angulation values are measured using the Frobin method (center plane of vertebral body) across all views, measured in degrees. Subscripts refer to the specific view(s) from which the maximum angulation values were observed (see KEY on page). Values are only returned for non-fusion levels.
4. Disc height is calculated according to the Frobin method and is measured in millimeters. Centerline disc height represents the average of the anterior and posterior disc heights.
5. For fusion levels, maximum confirmable angulation, measured in degrees, represents the maximum continuous angulation observed in any single cine imaging sequence, and may differ from the ROM values reported in other columns on this page.
6. Degrees of Intervertebral Range of Motion (angulation) observed between flexion and extension, taken from controlled, device-assisted lumbar bending. Values are only returned for non-fusion levels.
7. Degrees of Intervertebral Range of Motion (angulation) observed between flexion and extension, taken from uncontrolled patient lumbar bending. Values are only returned for non-fusion levels.
8. This is the sum of the L1-S1 motion, measured between the two end ranges (full flexion to full extension). Values are only provided if there are measurements at each level. Note that the sum of each level's angulation may be greater than the overall mobility, as overall mobility is measured between the two end ranges, while segmental mobility is measured as the maximum value observed at any point during the bend.
9. Visual Analog Scale (VAS) Pain scores were collected from patient during testing. Separate scores were collected for leg (below the belt) vs. back (above the belt) pain.
10. Degrees of Intervertebral Range of Motion (angulation) observed between left and right, taken from controlled patient lumbar bending. Values are only returned for non-fusion levels.
11. Degrees of Intervertebral Range of Motion (angulation) observed between left and right, taken from uncontrolled, device-assisted lumbar bending. Values are only returned for non-fusion levels.
12. This is the sum of the L1-S1 motion, measured between the two end ranges (full left to full right). Values are only provided if there are measurements at each level. Note that the sum of each level's angulation may be greater than the overall mobility, as overall mobility is measured between the two end ranges, while segmental mobility is measured as the maximum value observed at any point during the bend.
13. The measurements of PI, SS, PT, and LL come from an analysis of images using OrthoView software (K063327). The diagram of sagittal alignment is rendered based on a dataset including data derived via the OrthoView as well as the VMA software.
14. Translation is measured using the Meyerding method, and provided in millimeter units [if possible], and also as percent of the inferior vertebral body sagittal-plane depth. Negative values refer to retrolisthesis, positive values refer to spondylolisthesis. Values are only returned for non-fusion levels and only for lateral-view images (e.g. flexion extension bending).
15. Lordosis Angle data table values are calculated as the angle between the inferior end plate of the cephalad vertebral body and the superior end plate of the caudal vertebral body.