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\USER

NIMH

[XT-ID:93-M-0170]Renzo

20240607\_3RD\_ORDER\_SHIM

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\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\localizer

TA: 0:15 PM: REF Voxel size: 0.5×0.5×5.0 mmPAT: Off Rel. SNR: 1.00 : qfl

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | On                 |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | On                 |
| Load images to graphic segments               | On                 |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | On                 |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                   |
|--------------------|-------------------|
| Slice group        | 1                 |
| Slices             | 1                 |
| Dist. factor       | 20 %              |
| Position           | Isocenter         |
| Orientation        | Sagittal          |
| Phase enc. dir.    | A >> P            |
| Slice group        | 2                 |
| Slices             | 1                 |
| Dist. factor       | 20 %              |
| Position           | Isocenter         |
| Orientation        | Transversal       |
| Phase enc. dir.    | A >> P            |
| Slice group        | 3                 |
| Slices             | 1                 |
| Dist. factor       | 20 %              |
| Position           | Isocenter         |
| Orientation        | Coronal           |
| Phase enc. dir.    | R >> L            |
| AutoAlign          | ---               |
| Phase oversampling | 0 %               |
| FoV read           | 250 mm            |
| FoV phase          | 100.0 %           |
| Slice thickness    | 5.0 mm            |
| TR                 | 8.6 ms            |
| TE                 | 3.69 ms           |
| Averages           | 2                 |
| Concatenations     | 3                 |
| Filter             | Elliptical filter |
| Coil elements      | A32               |

**Contrast - Common**

|                   |         |
|-------------------|---------|
| TR                | 8.6 ms  |
| TE                | 3.69 ms |
| TD                | 0 ms    |
| MTC               | Off     |
| Magn. preparation | None    |
| Flip angle        | 20 deg  |
| Fat suppr.        | None    |
| Water suppr.      | None    |
| SWI               | Off     |

**Contrast - Dynamic**

|                |            |
|----------------|------------|
| Averages       | 2          |
| Averaging mode | Short term |
| Reconstruction | Magnitude  |
| Measurements   | 1          |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Multiple series | Each measurement |
|-----------------|------------------|

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 250 mm  |
| FoV phase             | 100.0 % |
| Slice thickness       | 5.0 mm  |
| Base resolution       | 256     |
| Phase resolution      | 100 %   |
| Phase partial Fourier | Off     |
| Interpolation         | On      |

**Resolution - iPAT**

|          |      |
|----------|------|
| PAT mode | None |
|----------|------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | On  |

**Geometry - Common**

|                  |             |
|------------------|-------------|
| Slice group      | 1           |
| Slices           | 1           |
| Dist. factor     | 20 %        |
| Position         | Isocenter   |
| Orientation      | Sagittal    |
| Phase enc. dir.  | A >> P      |
| Slice group      | 2           |
| Slices           | 1           |
| Dist. factor     | 20 %        |
| Position         | Isocenter   |
| Orientation      | Transversal |
| Phase enc. dir.  | A >> P      |
| Slice group      | 3           |
| Slices           | 1           |
| Dist. factor     | 20 %        |
| Position         | Isocenter   |
| Orientation      | Coronal     |
| Phase enc. dir.  | R >> L      |
| FoV read         | 250 mm      |
| FoV phase        | 100.0 %     |
| Slice thickness  | 5.0 mm      |
| TR               | 8.6 ms      |
| Multi-slice mode | Sequential  |
| Series           | Interleaved |
| Concatenations   | 3           |

**Geometry - AutoAlign**

|                 |             |
|-----------------|-------------|
| Slice group     | 1           |
| Position        | Isocenter   |
| Orientation     | Sagittal    |
| Phase enc. dir. | A >> P      |
| Slice group     | 2           |
| Position        | Isocenter   |
| Orientation     | Transversal |

**Geometry - AutoAlign**

|                     |           |
|---------------------|-----------|
| Phase enc. dir.     | A >> P    |
| Slice group         | 3         |
| Position            | Isocenter |
| Orientation         | Coronal   |
| Phase enc. dir.     | R >> L    |
| AutoAlign           | ---       |
| Initial Position    | Isocenter |
| L                   | 0.0 mm    |
| P                   | 0.0 mm    |
| H                   | 0.0 mm    |
| Initial Rotation    | 0.00 deg  |
| Initial Orientation | Sagittal  |

**Geometry - Saturation**

|                 |          |
|-----------------|----------|
| Saturation mode | Standard |
| Fat suppr.      | None     |
| Water suppr.    | None     |
| Special sat.    | None     |

**Geometry - Tim CT**

|                 |         |
|-----------------|---------|
| Tim CT mode     | Off     |
| Slices          | 1       |
| Slice thickness | 5.0 mm  |
| Dist. factor    | 20 %    |
| FoV read        | 250 mm  |
| FoV phase       | 100.0 % |
| Segments        | 1       |

**System - Miscellaneous**

|                     |                      |
|---------------------|----------------------|
| Positioning mode    | REF                  |
| Table position      | F                    |
| Table position      | 0 mm                 |
| MSMA                | S - C - T            |
| Sagittal            | R >> L               |
| Coronal             | A >> P               |
| Transversal         | F >> H               |
| Coil Combine Mode   | Sum of Squares       |
| Save uncombined     | Off                  |
| Matrix Optimization | Off                  |
| AutoAlign           | ---                  |
| Coil Select Mode    | Off - AutoCoilSelect |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Tune up  |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |             |
|-------------|-------------|
| Position    | Isocenter   |
| Orientation | Transversal |
| Rotation    | 0.00 deg    |
| A >> P      | 263 mm      |
| R >> L      | 350 mm      |
| F >> H      | 350 mm      |
| Reset       | Off         |

**System - Tx/Rx**

|                   |                |
|-------------------|----------------|
| Frequency 1H      | 297.188271 MHz |
| Correction factor | 1              |
| Gain              | High           |
| Img. Scale Cor.   | 1.000          |

**System - Tx/Rx**

|                     |         |
|---------------------|---------|
| Reset               | Off     |
| ? Ref. amplitude 1H | 0.000 V |

**Physio - Signal1**

|                 |        |
|-----------------|--------|
| 1st Signal/Mode | None   |
| TR              | 8.6 ms |
| Concatenations  | 3      |
| Segments        | 1      |

**Physio - Cardiac**

|                   |         |
|-------------------|---------|
| Magn. preparation | None    |
| Fat suppr.        | None    |
| Dark blood        | Off     |
| FoV read          | 250 mm  |
| FoV phase         | 100.0 % |
| Phase resolution  | 100 %   |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 3   |

**Inline - Common**

|                      |     |
|----------------------|-----|
| Subtract             | Off |
| Measurements         | 1   |
| StdDev               | Off |
| Liver registration   | Off |
| Save original images | On  |

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Soft Tissue**

|              |     |
|--------------|-----|
| Wash - In    | Off |
| Wash - Out   | Off |
| TTP          | Off |
| PEI          | Off |
| MIP - time   | Off |
| Measurements | 1   |

**Inline - Composing**

|                  |     |
|------------------|-----|
| Distortion Corr. | Off |
|------------------|-----|

**Sequence - Part 1**

|                     |            |
|---------------------|------------|
| Introduction        | On         |
| Dimension           | 2D         |
| Phase stabilisation | Off        |
| Asymmetric echo     | Allowed    |
| Contrasts           | 1          |
| Flow comp.          | No         |
| Multi-slice mode    | Sequential |
| Bandwidth           | 320 Hz/Px  |

**Sequence - Part 2**

|                          |            |
|--------------------------|------------|
| Segments                 | 1          |
| Acoustic noise reduction | Active     |
| RF pulse type            | Normal     |
| Gradient mode            | Normal     |
| Excitation               | Slice-sel. |
| RF spoiling              | On         |

**Sequence - Nuclei**

|                       |      |
|-----------------------|------|
| TX/RX Nucleus         | 1H   |
| TX/RX delta frequency | 0 Hz |
| TX Nucleus            | None |
| TX delta frequency    | 0 Hz |
| Coil elements         | A32  |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\ep2d\_axial\_huighres\_866

TA: 0:20 PM: REF Voxel size: 0.9×0.9×0.8 mmPAT: 3 Rel. SNR: 1.00 : epfid

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                   |
|--------------------|-------------------|
| Slice group        | 1                 |
| Slices             | 26                |
| Dist. factor       | 0 %               |
| Position           | L0.0 A6.6 F6.1 mm |
| Orientation        | Transversal       |
| Phase enc. dir.    | A >> P            |
| AutoAlign          | ---               |
| Phase oversampling | 0 %               |
| FoV read           | 180 mm            |
| FoV phase          | 100.0 %           |
| Slice thickness    | 0.8 mm            |
| TR                 | 2000 ms           |
| TE                 | 30.0 ms           |
| Averages           | 1                 |
| Concatenations     | 1                 |
| Filter             | None              |
| Coil elements      | A32               |

**Contrast - Common**

|                |         |
|----------------|---------|
| TR             | 2000 ms |
| TE             | 30.0 ms |
| MTC            | Off     |
| Flip angle exc | 30 deg  |
| Fat suppr.     | None    |

**Contrast - Dynamic**

|                 |           |
|-----------------|-----------|
| Averages        | 1         |
| Averaging mode  | Long term |
| Reconstruction  | Magnitude |
| Measurements    | 5         |
| Delay in TR     | 0 ms      |
| Multiple series | Off       |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 180 mm  |
| FoV phase             | 100.0 % |
| Slice thickness       | 0.8 mm  |
| Base resolution       | 206     |
| Phase resolution      | 100 %   |
| Phase partial Fourier | 6/8     |
| Interpolation         | Off     |

**Resolution - iPAT**

|                  |        |
|------------------|--------|
| Accel. mode      | GRAPPA |
| Accel. factor PE | 3      |
| Ref. lines PE    | 36     |

**Resolution - iPAT**

|                     |              |
|---------------------|--------------|
| Reference scan mode | EPI/separate |
|---------------------|--------------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Distortion Corr.  | Off |
| Prescan Normalize | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |
| Hamming           | Off |

**Geometry - Common**

|                  |                   |
|------------------|-------------------|
| Slice group      | 1                 |
| Slices           | 26                |
| Dist. factor     | 0 %               |
| Position         | L0.0 A6.6 F6.1 mm |
| Orientation      | Transversal       |
| Phase enc. dir.  | A >> P            |
| FoV read         | 180 mm            |
| FoV phase        | 100.0 %           |
| Slice thickness  | 0.8 mm            |
| TR               | 2000 ms           |
| Multi-slice mode | Interleaved       |
| Series           | Interleaved       |
| Concatenations   | 1                 |

**Geometry - AutoAlign**

|                     |                   |
|---------------------|-------------------|
| Slice group         | 1                 |
| Position            | L0.0 A6.6 F6.1 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | A >> P            |
| AutoAlign           | ---               |
| Initial Position    | L0.0 A6.6 F6.1    |
| L                   | 0.0 mm            |
| A                   | 6.6 mm            |
| F                   | 6.1 mm            |
| Initial Rotation    | 0.00 deg          |
| Initial Orientation | Transversal       |

**Geometry - Saturation**

|              |      |
|--------------|------|
| Fat suppr.   | None |
| Special sat. | None |

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Positioning mode    | REF            |
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |

**System - Adjustments**

|                      |      |
|----------------------|------|
| Assume Dominant Fat  | Off  |
| Assume Silicone      | Off  |
| Adjustment Tolerance | Auto |

**System - Adjust Volume**

|               |                   |
|---------------|-------------------|
| ! Position    | L0.0 A6.6 F6.1 mm |
| ! Orientation | Transversal       |
| ! Rotation    | 0.00 deg          |
| ! A >> P      | 180 mm            |
| ! R >> L      | 180 mm            |
| ! F >> H      | 33 mm             |
| Reset         | Off               |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.500          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |         |
|-----------------|---------|
| 1st Signal/Mode | None    |
| TR              | 2000 ms |
| Concatenations  | 1       |

**BOLD**

|                         |          |
|-------------------------|----------|
| GLM Statistics          | Off      |
| Dynamic t-maps          | Off      |
| Ignore meas. at start   | 0        |
| Ignore after transition | 0        |
| Model transition states | On       |
| Temp. highpass filter   | On       |
| Threshold               | 4.00     |
| Paradigm size           | 20       |
| Meas[1]                 | Baseline |
| Meas[2]                 | Baseline |
| Meas[3]                 | Baseline |
| Meas[4]                 | Baseline |
| Meas[5]                 | Baseline |
| Meas[6]                 | Baseline |
| Meas[7]                 | Baseline |
| Meas[8]                 | Baseline |
| Meas[9]                 | Baseline |
| Meas[10]                | Baseline |
| Meas[11]                | Active   |
| Meas[12]                | Active   |
| Meas[13]                | Active   |
| Meas[14]                | Active   |
| Meas[15]                | Active   |
| Meas[16]                | Active   |
| Meas[17]                | Active   |
| Meas[18]                | Active   |
| Meas[19]                | Active   |
| Meas[20]                | Active   |
| Motion correction       | Off      |
| Spatial filter          | Off      |
| Measurements            | 5        |
| Delay in TR             | 0 ms     |
| Multiple series         | Off      |

**Sequence - Part 1**

|                  |             |
|------------------|-------------|
| Introduction     | Off         |
| Multi-slice mode | Interleaved |

**Sequence - Part 1**

|                   |           |
|-------------------|-----------|
| Free echo spacing | Off       |
| Echo spacing      | 1.26 ms   |
| Bandwidth         | 866 Hz/Px |

**Sequence - Part 2**

|               |      |
|---------------|------|
| EPI factor    | 206  |
| RF pulse type | Fast |
| Gradient mode | Fast |

\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\ep2d\_axial\_2mmlso\_150meas

TA: 0:24 PM: REF Voxel size: 2.0×2.0×2.0 mmPAT: Off Rel. SNR: 1.00 : epfid

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                    |
|--------------------|--------------------|
| Slice group        | 1                  |
| Slices             | 25                 |
| Dist. factor       | 200 %              |
| Position           | L0.0 A15.0 F4.8 mm |
| Orientation        | Transversal        |
| Phase enc. dir.    | A >> P             |
| AutoAlign          | ---                |
| Phase oversampling | 0 %                |
| FoV read           | 220 mm             |
| FoV phase          | 100.0 %            |
| Slice thickness    | 2.0 mm             |
| TR                 | 2000 ms            |
| TE                 | 36.0 ms            |
| Averages           | 1                  |
| Concatenations     | 1                  |
| Filter             | None               |
| Coil elements      | A32                |

**Contrast - Common**

|                |         |
|----------------|---------|
| TR             | 2000 ms |
| TE             | 36.0 ms |
| MTC            | Off     |
| Flip angle exc | 30 deg  |
| Fat suppr.     | None    |

**Contrast - Dynamic**

|                 |           |
|-----------------|-----------|
| Averages        | 1         |
| Averaging mode  | Long term |
| Reconstruction  | Magnitude |
| Measurements    | 10        |
| Delay in TR     | 0 ms      |
| Multiple series | Off       |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 220 mm  |
| FoV phase             | 100.0 % |
| Slice thickness       | 2.0 mm  |
| Base resolution       | 110     |
| Phase resolution      | 100 %   |
| Phase partial Fourier | Off     |
| Interpolation         | Off     |

**Resolution - iPAT**

|             |      |
|-------------|------|
| Accel. mode | None |
|-------------|------|

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Distortion Corr.  | Off |
| Prescan Normalize | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |
| Hamming           | Off |

**Geometry - Common**

|                  |                    |
|------------------|--------------------|
| Slice group      | 1                  |
| Slices           | 25                 |
| Dist. factor     | 200 %              |
| Position         | L0.0 A15.0 F4.8 mm |
| Orientation      | Transversal        |
| Phase enc. dir.  | A >> P             |
| FoV read         | 220 mm             |
| FoV phase        | 100.0 %            |
| Slice thickness  | 2.0 mm             |
| TR               | 2000 ms            |
| Multi-slice mode | Interleaved        |
| Series           | Interleaved        |
| Concatenations   | 1                  |

**Geometry - AutoAlign**

|                     |                    |
|---------------------|--------------------|
| Slice group         | 1                  |
| Position            | L0.0 A15.0 F4.8 mm |
| Orientation         | Transversal        |
| Phase enc. dir.     | A >> P             |
| AutoAlign           | ---                |
| Initial Position    | L0.0 A15.0 F4.8    |
| L                   | 0.0 mm             |
| A                   | 15.0 mm            |
| F                   | 4.8 mm             |
| Initial Rotation    | 0.00 deg           |
| Initial Orientation | Transversal        |

**Geometry - Saturation**

|              |      |
|--------------|------|
| Fat suppr.   | None |
| Special sat. | None |

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Positioning mode    | REF            |
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |                    |
|-------------|--------------------|
| Position    | L0.0 A15.0 F4.8 mm |
| Orientation | Transversal        |
| Rotation    | 0.00 deg           |
| A >> P      | 220 mm             |
| R >> L      | 220 mm             |
| F >> H      | 146 mm             |
| Reset       | Off                |

**Sequence - Part 2**

|               |      |
|---------------|------|
| EPI factor    | 110  |
| RF pulse type | Fast |
| Gradient mode | Fast |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.500          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |         |
|-----------------|---------|
| 1st Signal/Mode | None    |
| TR              | 2000 ms |
| Concatenations  | 1       |

**BOLD**

|                         |          |
|-------------------------|----------|
| GLM Statistics          | Off      |
| Dynamic t-maps          | Off      |
| Ignore meas. at start   | 0        |
| Ignore after transition | 0        |
| Model transition states | On       |
| Temp. highpass filter   | On       |
| Threshold               | 4.00     |
| Paradigm size           | 20       |
| Meas[1]                 | Baseline |
| Meas[2]                 | Baseline |
| Meas[3]                 | Baseline |
| Meas[4]                 | Baseline |
| Meas[5]                 | Baseline |
| Meas[6]                 | Baseline |
| Meas[7]                 | Baseline |
| Meas[8]                 | Baseline |
| Meas[9]                 | Baseline |
| Meas[10]                | Baseline |
| Meas[11]                | Active   |
| Meas[12]                | Active   |
| Meas[13]                | Active   |
| Meas[14]                | Active   |
| Meas[15]                | Active   |
| Meas[16]                | Active   |
| Meas[17]                | Active   |
| Meas[18]                | Active   |
| Meas[19]                | Active   |
| Meas[20]                | Active   |
| Motion correction       | Off      |
| Spatial filter          | Off      |
| Measurements            | 10       |
| Delay in TR             | 0 ms     |
| Multiple series         | Off      |

**Sequence - Part 1**

|                   |             |
|-------------------|-------------|
| Introduction      | Off         |
| Multi-slice mode  | Interleaved |
| Free echo spacing | On          |
| Echo spacing      | 0.57 ms     |
| Bandwidth         | 2164 Hz/Px  |



\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\uk7t\_gre\_epi\_96\_FROM\_tYLE  
R\_SIEMENS\_AP

TA: 0:48 PM: FIX Voxel size: 1.5×1.5×1.5 mmPAT: 2 Rel. SNR: 1.00 : epfid

### Properties

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

### Routine

|                          |                   |
|--------------------------|-------------------|
| Slice group              | 1                 |
| Slices                   | 96                |
| Dist. factor             | 0 %               |
| Position                 | L0.0 A6.3 F5.3 mm |
| Orientation              | Transversal       |
| Phase enc. dir.          | A >> P            |
| AutoAlign                | ---               |
| Phase oversampling       | 0 %               |
| FoV read                 | 192 mm            |
| FoV phase                | 100.0 %           |
| Slice thickness          | 1.50 mm           |
| TR                       | 1500 ms           |
| TE                       | 22.00 ms          |
| Multi-band accel. factor | 4                 |
| Filter                   | None              |
| Coil elements            | A32               |

### Contrast - Common

|                   |          |
|-------------------|----------|
| TR                | 1500 ms  |
| TE                | 22.00 ms |
| MTC               | Off      |
| Magn. preparation | None     |
| Flip angle        | 65 deg   |
| Fat suppr.        | Fat sat. |

### Contrast - Dynamic

|                 |           |
|-----------------|-----------|
| Averaging mode  | Long term |
| Reconstruction  | Magnitude |
| Measurements    | 10        |
| Delay in TR     | 0 ms      |
| Multiple series | Off       |

### Resolution - Common

|                       |         |
|-----------------------|---------|
| FoV read              | 192 mm  |
| FoV phase             | 100.0 % |
| Slice thickness       | 1.50 mm |
| Base resolution       | 128     |
| Phase resolution      | 100 %   |
| Phase partial Fourier | 6/8     |
| Interpolation         | Off     |

### Resolution - iPAT

|                  |        |
|------------------|--------|
| PAT mode         | GRAPPA |
| Accel. factor PE | 2      |
| Ref. lines PE    | 24     |

### Resolution - iPAT

|                     |     |
|---------------------|-----|
| Reference scan mode | GRE |
|---------------------|-----|

### Resolution - Filter Image

|                   |     |
|-------------------|-----|
| Distortion Corr.  | Off |
| Prescan Normalize | Off |

### Resolution - Filter Rawdata

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |
| Hamming           | Off |

### Geometry - Common

|                          |                   |
|--------------------------|-------------------|
| Slice group              | 1                 |
| Slices                   | 96                |
| Dist. factor             | 0 %               |
| Position                 | L0.0 A6.3 F5.3 mm |
| Orientation              | Transversal       |
| Phase enc. dir.          | A >> P            |
| FoV read                 | 192 mm            |
| FoV phase                | 100.0 %           |
| Slice thickness          | 1.50 mm           |
| TR                       | 1500 ms           |
| Multi-slice mode         | Interleaved       |
| Series                   | Interleaved       |
| Multi-band accel. factor | 4                 |

### Geometry - AutoAlign

|                     |                   |
|---------------------|-------------------|
| Slice group         | 1                 |
| Position            | L0.0 A6.3 F5.3 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | A >> P            |
| AutoAlign           | ---               |
| Initial Position    | L0.0 A6.3 F5.3    |
| L                   | 0.0 mm            |
| A                   | 6.3 mm            |
| F                   | 5.3 mm            |
| Initial Rotation    | 0.00 deg          |
| Initial Orientation | Transversal       |

### Geometry - Saturation

|              |          |
|--------------|----------|
| Fat suppr.   | Fat sat. |
| Special sat. | None     |

### System - Miscellaneous

|                     |                |
|---------------------|----------------|
| Positioning mode    | FIX            |
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

### System - Adjustments

|              |       |
|--------------|-------|
| B0 Shim mode | Brain |
|--------------|-------|

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|               |                    |
|---------------|--------------------|
| ! Position    | L0.0 A15.0 F4.8 mm |
| ! Orientation | Transversal        |
| ! Rotation    | 0.00 deg           |
| ! A >> P      | 220 mm             |
| ! R >> L      | 220 mm             |
| ! F >> H      | 146 mm             |
| Reset         | Off                |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ! Ref. amplitude 1H | 250.000 V      |

**Physio - Signal1**

|                          |         |
|--------------------------|---------|
| 1st Signal/Mode          | None    |
| TR                       | 1500 ms |
| Multi-band accel. factor | 4       |

**BOLD**

|                         |          |
|-------------------------|----------|
| GLM Statistics          | Off      |
| Dynamic t-maps          | Off      |
| Ignore meas. at start   | 0        |
| Ignore after transition | 0        |
| Model transition states | On       |
| Temp. highpass filter   | On       |
| Threshold               | 4.00     |
| Paradigm size           | 20       |
| Meas[1]                 | Baseline |
| Meas[2]                 | Baseline |
| Meas[3]                 | Baseline |
| Meas[4]                 | Baseline |
| Meas[5]                 | Baseline |
| Meas[6]                 | Baseline |
| Meas[7]                 | Baseline |
| Meas[8]                 | Baseline |
| Meas[9]                 | Baseline |
| Meas[10]                | Baseline |
| Meas[11]                | Active   |
| Meas[12]                | Active   |
| Meas[13]                | Active   |
| Meas[14]                | Active   |
| Meas[15]                | Active   |
| Meas[16]                | Active   |
| Meas[17]                | Active   |
| Meas[18]                | Active   |
| Meas[19]                | Active   |
| Meas[20]                | Active   |
| Motion correction       | Off      |
| Spatial filter          | Off      |
| Measurements            | 10       |
| Delay in TR             | 0 ms     |
| Multiple series         | Off      |

**Sequence - Part 1**

|                   |             |
|-------------------|-------------|
| Introduction      | Off         |
| Contrasts         | 1           |
| Flow comp.        | No          |
| Multi-slice mode  | Interleaved |
| Free echo spacing | Off         |
| Echo spacing      | 0.72 ms     |
| Bandwidth         | 1628 Hz/Px  |

**Sequence - Part 2**

|               |        |
|---------------|--------|
| EPI factor    | 128    |
| Gradient mode | Normal |
| RF spoiling   | Off    |

**Sequence - Special**

|                          |           |
|--------------------------|-----------|
| Excite pulse duration    | 7000 us   |
| EPI noise scans          | 0         |
| Single-band images       | On        |
| MB LeakBlock kernel      | Off       |
| MB dual kernel           | On        |
| MB RF phase scramble     | On        |
| SENSE1 coil combine      | Off       |
| Invert RO/PE polarity    | Off       |
| PF omits higher k-space  | Off       |
| Disable freq. update     | Off       |
| Force equal slice timing | Off       |
| Online multi-band recon. | Online    |
| FFT scale factor         | 1.00      |
| Fat saturation FA        | 110.0 deg |
| GRE iPAT ref. FA         | 12.0 deg  |
| Physio recording         | Off       |
| Triggering scheme        | Standard  |

\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\t1\_mprage\_sag\_1mm\_P3

TA: 4:35 PM: FIX Voxel size: 1.0×1.0×1.0 mmPAT: 3 Rel. SNR: 1.00 : tfl

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |                    |
|--------------------|--------------------|
| Slab group         | 1                  |
| Slabs              | 1                  |
| Dist. factor       | 50 %               |
| Position           | L3.6 A14.8 H0.0 mm |
| Orientation        | Sagittal           |
| Phase enc. dir.    | A >> P             |
| AutoAlign          | ---                |
| Phase oversampling | 1 %                |
| Slice oversampling | 10.0 %             |
| Slices per slab    | 160                |
| FoV read           | 220 mm             |
| FoV phase          | 100.0 %            |
| Slice thickness    | 1.00 mm            |
| TR                 | 3000.0 ms          |
| TE                 | 1.65 ms            |
| Averages           | 1                  |
| Concatenations     | 1                  |
| Filter             | B1 filter          |
| Coil elements      | A32                |

**Contrast - Common**

|                   |                   |
|-------------------|-------------------|
| TR                | 3000.0 ms         |
| TE                | 1.65 ms           |
| Magn. preparation | Non-sel. IR       |
| T1                | 1050 ms           |
| Flip angle        | 6.0 deg           |
| Fat suppr.        | Water excit. fast |
| Water suppr.      | None              |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Averages        | 1                |
| Averaging mode  | Long term        |
| Reconstruction  | Magnitude        |
| Measurements    | 1                |
| Multiple series | Each measurement |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 220 mm  |
| FoV phase             | 100.0 % |
| Slice thickness       | 1.00 mm |
| Base resolution       | 220     |
| Phase resolution      | 100 %   |
| Slice resolution      | 100 %   |
| Phase partial Fourier | Off     |
| Slice partial Fourier | Off     |
| Interpolation         | Off     |

**Resolution - iPAT**

|                     |            |
|---------------------|------------|
| PAT mode            | GRAPPA     |
| Accel. factor PE    | 3          |
| Ref. lines PE       | 24         |
| Accel. factor 3D    | 1          |
| Reference scan mode | Integrated |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | On  |
| Unfiltered images | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                    |                    |
|--------------------|--------------------|
| Slab group         | 1                  |
| Slabs              | 1                  |
| Dist. factor       | 50 %               |
| Position           | L3.6 A14.8 H0.0 mm |
| Orientation        | Sagittal           |
| Phase enc. dir.    | A >> P             |
| Slice oversampling | 10.0 %             |
| Slices per slab    | 160                |
| FoV read           | 220 mm             |
| FoV phase          | 100.0 %            |
| Slice thickness    | 1.00 mm            |
| TR                 | 3000.0 ms          |
| Multi-slice mode   | Single shot        |
| Series             | Interleaved        |
| Concatenations     | 1                  |

**Geometry - AutoAlign**

|                     |                    |
|---------------------|--------------------|
| Slab group          | 1                  |
| Position            | L3.6 A14.8 H0.0 mm |
| Orientation         | Sagittal           |
| Phase enc. dir.     | A >> P             |
| AutoAlign           | ---                |
| Initial Position    | L3.6 A14.8 H0.0    |
| L                   | 3.6 mm             |
| A                   | 14.8 mm            |
| F                   | 0.0 mm             |
| Initial Rotation    | 0.00 deg           |
| Initial Orientation | Sagittal           |

**Geometry - Navigator****System - Miscellaneous**

|                   |                |
|-------------------|----------------|
| Positioning mode  | FIX            |
| Table position    | H              |
| Table position    | 0 mm           |
| MSMA              | S - C - T      |
| Sagittal          | R >> L         |
| Coronal           | A >> P         |
| Transversal       | F >> H         |
| Coil Combine Mode | Sum of Squares |
| Save uncombined   | Off            |

**System - Miscellaneous**

|                     |           |
|---------------------|-----------|
| Matrix Optimization | Off       |
| AutoAlign           | ---       |
| Coil Select Mode    | Off - All |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |                    |
|-------------|--------------------|
| Position    | L3.6 A14.8 H0.0 mm |
| Orientation | Sagittal           |
| Rotation    | 0.00 deg           |
| A >> P      | 220 mm             |
| F >> H      | 220 mm             |
| R >> L      | 160 mm             |
| Reset       | Off                |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |           |
|-----------------|-----------|
| 1st Signal/Mode | None      |
| TR              | 3000.0 ms |
| Concatenations  | 1         |

**Physio - Cardiac**

|                   |                   |
|-------------------|-------------------|
| Magn. preparation | Non-sel. IR       |
| T1                | 1050 ms           |
| Fat suppr.        | Water excit. fast |
| Dark blood        | Off               |
| FoV read          | 220 mm            |
| FoV phase         | 100.0 %           |
| Phase resolution  | 100 %             |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 1   |

**Inline - Common**

|                      |     |
|----------------------|-----|
| Subtract             | Off |
| Measurements         | 1   |
| StdDev               | Off |
| Save original images | On  |

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                  |     |
|------------------|-----|
| Distortion Corr. | Off |
|------------------|-----|

**Sequence - Part 1**

|                     |             |
|---------------------|-------------|
| Introduction        | On          |
| Dimension           | 3D          |
| Elliptical scanning | Off         |
| Reordering          | Linear      |
| Asymmetric echo     | Allowed     |
| Flow comp.          | No          |
| Multi-slice mode    | Single shot |
| Echo spacing        | 5.9 ms      |
| Bandwidth           | 300 Hz/Px   |

**Sequence - Part 2**

|                         |          |
|-------------------------|----------|
| RF pulse type           | Fast     |
| Gradient mode           | Fast     |
| Excitation              | Non-sel. |
| RF spoiling             | On       |
| Incr. Gradient spoiling | On       |
| Turbo factor            | 176      |

**Sequence - Nuclei**

|                       |      |
|-----------------------|------|
| TX/RX Nucleus         | 1H   |
| TX/RX delta frequency | 0 Hz |
| TX Nucleus            | None |
| TX delta frequency    | 0 Hz |
| Coil elements         | A32  |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\rslh\_ep3d\_866\_1p26

TA: 0:44 PM: FIX Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : nih5k

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| AutoAlign       | ---               |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |
| TE 1            | 24.80 ms          |
| Averages        | 1                 |
| Filter          | None              |
| Coil elements   | A32               |

**Contrast - Common**

|                    |                 |
|--------------------|-----------------|
| TR 1               | 76.1 ms         |
| TR 2               | 6404 ms         |
| TE 1               | 24.80 ms        |
| Multi-echo spacing | 66.4 ms         |
| Magn. preparation  | Non-sel. HSN IR |
| TI 1               | 1629.8 ms       |
| TI 2               | 4369.4 ms       |
| Flip angle         | 57 deg          |
| Fat suppr.         | Fat sat.        |
| Magn. Prep. Shots  | 1               |

**Contrast - Dynamic**

|                     |             |
|---------------------|-------------|
| Averages            | 1           |
| Averaging mode      | Short term  |
| Reconstruction      | Magn./Phase |
| Measurements        | 5           |
| Pause after meas. 1 | 0.0 s       |
| Pause after meas. 2 | 0.0 s       |
| Pause after meas. 3 | 0.0 s       |
| Pause after meas. 4 | 0.0 s       |

**Resolution - Common**

|                  |         |
|------------------|---------|
| FoV read         | 175 mm  |
| FoV phase        | 100.0 % |
| Slice thickness  | 0.84 mm |
| Base resolution  | 206     |
| Phase resolution | 100 %   |

**Resolution - Common**

|                       |       |
|-----------------------|-------|
| Slice resolution      | 100 % |
| Phase partial Fourier | 6/8   |
| Slice partial Fourier | Off   |
| Interpolation         | Off   |

**Resolution - iPAT**

|                      |               |
|----------------------|---------------|
| PAT mode             | CAIPIRINHA    |
| Acc. factor PE       | 1             |
| Ref. lines PE        | 63            |
| Acc. factor 3D       | 3             |
| Ref. lines 3D        | 36            |
| CAIPI 3D Shift       | 1             |
| Reference Scan Mode  | EPI/separate  |
| CAIPI Mode (tooltip) | Skipped-CAIPI |
| Total PAT factor     | 3             |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |

**Geometry - AutoAlign**

|                     |                   |
|---------------------|-------------------|
| Slab group          | 1                 |
| Position            | L0.0 A6.6 F6.1 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | A >> P            |
| AutoAlign           | ---               |
| Initial Position    | L0.0 A6.6 F6.1    |
| L                   | 0.0 mm            |
| A                   | 6.6 mm            |
| F                   | 6.1 mm            |
| Initial Rotation    | 0.00 deg          |
| Initial Orientation | Transversal       |

**Geometry - Saturation**

|                 |          |
|-----------------|----------|
| Saturation mode | Standard |
| Fat suppr.      | Fat sat. |

**System - Miscellaneous**

|                  |     |
|------------------|-----|
| Positioning mode | FIX |
|------------------|-----|

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Save uncombined     | Off            |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|               |                   |
|---------------|-------------------|
| ! Position    | L0.0 A6.6 F6.1 mm |
| ! Orientation | Transversal       |
| ! Rotation    | 0.00 deg          |
| ! A >> P      | 180 mm            |
| ! R >> L      | 180 mm            |
| ! F >> H      | 33 mm             |
| Reset         | Off               |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | Low            |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ! Ref. amplitude 1H | 215.000 V      |

**Sequence - Part 1**

|              |           |
|--------------|-----------|
| Introduction | On        |
| Dimension    | 3D        |
| Reordering   | Linear    |
| Contrasts    | 1         |
| Echo spacing | 1.26 ms   |
| Bandwidth    | 866 Hz/Px |

**Sequence - Part 2**

|               |           |
|---------------|-----------|
| EPI factor    | 52        |
| Segmentation  | 3         |
| RF pulse type | Normal    |
| Gradient mode | Fast      |
| Excitation    | Slab-sel. |
| RF spoiling   | On        |
| Turbo factor  | 36        |

**Sequence - Special**

|                    |         |
|--------------------|---------|
| PATRef FA          | 3 deg   |
| RF duration        | 2000 us |
| RF BWT product     | 8       |
| Ernst T1           | 1200 ms |
| PATRef prep. shots | 10      |
| Volume dummy shots | 0       |
| Dummy Measurements | 0       |
| ETL per RTEB       | 1       |
| Invert PE          | Off     |

**Sequence - Special**

|                       |             |
|-----------------------|-------------|
| Min. TE if PF         | On          |
| Echo Time Shift       | On          |
| Ramp Sampling         | On          |
| NORDIC                | On          |
| SVDPC                 | Off         |
| Sym VASO              | Off         |
| Dual-pol. EPI         | On          |
| Invert RO             | Off         |
| Invert 3D             | Off         |
| Disable PF reco       | Off         |
| Disable PF reco       | Off         |
| Save sampling         | Off         |
| PE VComp              | Off         |
| Water Exc.            | -none-      |
| External PC           | per Series  |
| Saturation RF         | per Shot    |
| FIDNavs               | -none-      |
| EPI rise time factor  | 1.10        |
| Mosaic DICOMs         | On          |
| Modify Ice Config     | On          |
| G-factor map          | Off         |
| GRAPPA Regularization | 50000 10^-6 |
| HSN RF power scale    | 3.00        |
| Inversion Delay       | 250 ms      |
| Relaxation Delay      | 0 ms        |
| Var. FA /MAGEC        | 4           |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\USER\NIMH\[XT-ID:93-M-0170]Renzo\20240607\_3RD\_ORDER\_SHIM\2d T2 tse\_tra\_1x1x2mm

TA: 3:02 PM: FIX Voxel size: 1.0×1.0×2.0 mmPAT: 2 Rel. SNR: 1.00 : tse

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Resolution - iPAT**

|                     |                  |
|---------------------|------------------|
| PAT mode            | GRAPPA           |
| Accel. factor PE    | 2                |
| Ref. lines PE       | 32               |
| Reference scan mode | Self-calibration |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | On  |
| Unfiltered images | Off |
| B1 filter         | Off |

**Routine**

|                    |                       |
|--------------------|-----------------------|
| Slice group        | 1                     |
| Slices             | 63                    |
| Dist. factor       | 0 %                   |
| Position           | R2.4 A6.8 H6.7 mm     |
| Orientation        | Transversal           |
| Phase enc. dir.    | R >> L                |
| AutoAlign          | Head > Brain          |
| Phase oversampling | 0 %                   |
| FoV read           | 192 mm                |
| FoV phase          | 100.0 %               |
| Slice thickness    | 2.0 mm                |
| TR                 | 3000.0 ms             |
| TE                 | 78.0 ms               |
| Averages           | 2                     |
| Concatenations     | 3                     |
| Filter             | Raw filter, Normalize |
| Coil elements      | A32                   |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | On  |
| Elliptical filter | Off |

**Geometry - Common**

|                  |                   |
|------------------|-------------------|
| Slice group      | 1                 |
| Slices           | 63                |
| Dist. factor     | 0 %               |
| Position         | R2.4 A6.8 H6.7 mm |
| Orientation      | Transversal       |
| Phase enc. dir.  | R >> L            |
| FoV read         | 192 mm            |
| FoV phase        | 100.0 %           |
| Slice thickness  | 2.0 mm            |
| TR               | 3000.0 ms         |
| Multi-slice mode | Interleaved       |
| Series           | Interleaved       |
| Concatenations   | 3                 |

**Contrast - Common**

|                   |           |
|-------------------|-----------|
| TR                | 3000.0 ms |
| TE                | 78.0 ms   |
| TD                | 0.0 ms    |
| MTC               | Off       |
| Magn. preparation | None      |
| Flip angle        | 100 deg   |
| Fat suppr.        | Fat sat.  |
| Fat sat. mode     | Strong    |
| Water suppr.      | None      |
| Restore magn.     | Off       |

**Geometry - AutoAlign**

|                     |                   |
|---------------------|-------------------|
| Slice group         | 1                 |
| Position            | R2.4 A6.8 H6.7 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | R >> L            |
| AutoAlign           | Head > Brain      |
| Initial Position    | R2.4 A6.8 H6.7    |
| R                   | 2.4 mm            |
| A                   | 6.8 mm            |
| H                   | 6.7 mm            |
| Initial Rotation    | 90.00 deg         |
| Initial Orientation | Transversal       |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Averages        | 2                |
| Averaging mode  | Long term        |
| Reconstruction  | Magnitude        |
| Measurements    | 1                |
| Multiple series | Each measurement |

**Geometry - Saturation**

|               |          |
|---------------|----------|
| Fat suppr.    | Fat sat. |
| Fat sat. mode | Strong   |
| Water suppr.  | None     |
| Restore magn. | Off      |
| Special sat.  | None     |

**Resolution - Common**

|                       |           |
|-----------------------|-----------|
| FoV read              | 192 mm    |
| FoV phase             | 100.0 %   |
| Slice thickness       | 2.0 mm    |
| Base resolution       | 192       |
| Phase resolution      | 100 %     |
| Phase partial Fourier | Off       |
| Trajectory            | Cartesian |
| Interpolation         | Off       |

**Geometry - Navigator****Geometry - Tim CT**

|                 |        |
|-----------------|--------|
| Tim CT mode     | Off    |
| Slices          | 63     |
| Slice thickness | 2.0 mm |
| Dist. factor    | 0 %    |
| FoV read        | 192 mm |

**Geometry - Tim CT**

|           |         |
|-----------|---------|
| FoV phase | 100.0 % |
|-----------|---------|

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Positioning mode    | FIX            |
| Table position      | F              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Save uncombined     | Off            |
| Matrix Optimization | Off            |
| AutoAlign           | Head > Brain   |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |                   |
|-------------|-------------------|
| Position    | R2.4 A6.8 H6.7 mm |
| Orientation | Transversal       |
| Rotation    | 90.00 deg         |
| R >> L      | 192 mm            |
| A >> P      | 192 mm            |
| F >> H      | 126 mm            |
| Reset       | Off               |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |           |
|-----------------|-----------|
| 1st Signal/Mode | None      |
| TR              | 3000.0 ms |
| Concatenations  | 3         |

**Physio - Cardiac**

|                   |           |
|-------------------|-----------|
| Magn. preparation | None      |
| Fat suppr.        | Fat sat.  |
| Dark blood        | Off       |
| FoV read          | 192 mm    |
| FoV phase         | 100.0 %   |
| Phase resolution  | 100 %     |
| Trajectory        | Cartesian |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 3   |

**Inline - Common**

|              |     |
|--------------|-----|
| Subtract     | Off |
| Measurements | 1   |
| StdDev       | Off |

**Inline - Common**

|                      |    |
|----------------------|----|
| Save original images | On |
|----------------------|----|

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                  |     |
|------------------|-----|
| Distortion Corr. | Off |
|------------------|-----|

**Sequence - Part 1**

|                     |             |
|---------------------|-------------|
| Introduction        | On          |
| Dimension           | 2D          |
| Compensate T2 decay | Off         |
| Reduce Motion Sens. | Off         |
| Contrasts           | 1           |
| Flow comp.          | No          |
| Optimization        | In phase    |
| Multi-slice mode    | Interleaved |
| Free echo spacing   | Off         |
| Echo spacing        | 9.7 ms      |
| Bandwidth           | 362 Hz/Px   |

**Sequence - Part 2**

|                          |              |
|--------------------------|--------------|
| Define                   | Turbo factor |
| Echo trains per slice    | 9            |
| Phase correction         | Automatic    |
| Acoustic noise reduction | None         |
| RF pulse type            | Low SAR      |
| Gradient mode            | Normal       |
| Hyperecho                | On           |
| WARP                     | Off          |
| Red. EC sensitivity      | Off          |
| Turbo factor             | 11           |

**Sequence - Assistant**

|               |      |
|---------------|------|
| Mode          | Off  |
| Allowed delay | 60 s |



\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\rslh\_ep3d\_970\_1p13

TA: 0:44 PM: FIX Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : nih5k

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| AutoAlign       | ---               |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |
| TE 1            | 24.80 ms          |
| Averages        | 1                 |
| Filter          | None              |
| Coil elements   | A32               |

**Contrast - Common**

|                    |                 |
|--------------------|-----------------|
| TR 1               | 76.1 ms         |
| TR 2               | 6404 ms         |
| TE 1               | 24.80 ms        |
| Multi-echo spacing | 59.6 ms         |
| Magn. preparation  | Non-sel. HSN IR |
| TI 1               | 1629.8 ms       |
| TI 2               | 4369.4 ms       |
| Flip angle         | 57 deg          |
| Fat suppr.         | Fat sat.        |
| Magn. Prep. Shots  | 1               |

**Contrast - Dynamic**

|                     |             |
|---------------------|-------------|
| Averages            | 1           |
| Averaging mode      | Short term  |
| Reconstruction      | Magn./Phase |
| Measurements        | 5           |
| Pause after meas. 1 | 0.0 s       |
| Pause after meas. 2 | 0.0 s       |
| Pause after meas. 3 | 0.0 s       |
| Pause after meas. 4 | 0.0 s       |

**Resolution - Common**

|                  |         |
|------------------|---------|
| FoV read         | 175 mm  |
| FoV phase        | 100.0 % |
| Slice thickness  | 0.84 mm |
| Base resolution  | 206     |
| Phase resolution | 100 %   |

**Resolution - Common**

|                       |       |
|-----------------------|-------|
| Slice resolution      | 100 % |
| Phase partial Fourier | 6/8   |
| Slice partial Fourier | Off   |
| Interpolation         | Off   |

**Resolution - iPAT**

|                      |               |
|----------------------|---------------|
| PAT mode             | CAIPIRINHA    |
| Acc. factor PE       | 1             |
| Ref. lines PE        | 63            |
| Acc. factor 3D       | 3             |
| Ref. lines 3D        | 36            |
| CAIPI 3D Shift       | 1             |
| Reference Scan Mode  | EPI/separate  |
| CAIPI Mode (tooltip) | Skipped-CAIPI |
| Total PAT factor     | 3             |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |

**Geometry - AutoAlign**

|                     |                   |
|---------------------|-------------------|
| Slab group          | 1                 |
| Position            | L0.0 A6.6 F6.1 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | A >> P            |
| AutoAlign           | ---               |
| Initial Position    | L0.0 A6.6 F6.1    |
| L                   | 0.0 mm            |
| A                   | 6.6 mm            |
| F                   | 6.1 mm            |
| Initial Rotation    | 0.00 deg          |
| Initial Orientation | Transversal       |

**Geometry - Saturation**

|                 |          |
|-----------------|----------|
| Saturation mode | Standard |
| Fat suppr.      | Fat sat. |

**System - Miscellaneous**

|                  |     |
|------------------|-----|
| Positioning mode | FIX |
|------------------|-----|

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Save uncombined     | Off            |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|               |                   |
|---------------|-------------------|
| ! Position    | L0.0 A6.6 F6.1 mm |
| ! Orientation | Transversal       |
| ! Rotation    | 0.00 deg          |
| ! A >> P      | 180 mm            |
| ! R >> L      | 180 mm            |
| ! F >> H      | 33 mm             |
| Reset         | Off               |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | Low            |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ! Ref. amplitude 1H | 215.000 V      |

**Sequence - Part 1**

|              |           |
|--------------|-----------|
| Introduction | On        |
| Dimension    | 3D        |
| Reordering   | Linear    |
| Contrasts    | 1         |
| Echo spacing | 1.13 ms   |
| Bandwidth    | 970 Hz/Px |

**Sequence - Part 2**

|               |           |
|---------------|-----------|
| EPI factor    | 52        |
| Segmentation  | 3         |
| RF pulse type | Normal    |
| Gradient mode | Fast      |
| Excitation    | Slab-sel. |
| RF spoiling   | On        |
| Turbo factor  | 36        |

**Sequence - Special**

|                    |         |
|--------------------|---------|
| PATRef FA          | 3 deg   |
| RF duration        | 2000 us |
| RF BWT product     | 8       |
| Ernst T1           | 1200 ms |
| PATRef prep. shots | 10      |
| Volume dummy shots | 0       |
| Dummy Measurements | 0       |
| ETL per RTEB       | 1       |
| Invert PE          | Off     |

**Sequence - Special**

|                       |             |
|-----------------------|-------------|
| Min. TE if PF         | On          |
| Echo Time Shift       | On          |
| Ramp Sampling         | On          |
| NORDIC                | On          |
| SVDPC                 | Off         |
| Sym VASO              | Off         |
| Dual-pol. EPI         | On          |
| Invert RO             | Off         |
| Invert 3D             | Off         |
| Disable PF reco       | Off         |
| Disable PF reco       | Off         |
| Save sampling         | Off         |
| PE VComp              | Off         |
| Water Exc.            | -none-      |
| External PC           | per Series  |
| Saturation RF         | per Shot    |
| FIDNavs               | -none-      |
| EPI rise time factor  | 1.10        |
| Mosaic DICOMs         | On          |
| Modify Ice Config     | On          |
| G-factor map          | Off         |
| GRAPPA Regularization | 50000 10^-6 |
| HSN RF power scale    | 3.00        |
| Inversion Delay       | 250 ms      |
| Relaxation Delay      | 0 ms        |
| Var. FA /MAGEC        | 4           |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

|  |
|--|
| \\USER\NIMH\XT-ID:93-M-0170]Renzo\20240607_3RD_ORDER_SHIM\3d flair spc sag__p4_1mm_Cai<br>pi |
| TA: 5:08 PM: FIX Voxel size: 1.0×1.0×1.0 mmPAT: 6 Rel. SNR: 1.00 : spcir                     |

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | On                 |
| Load images to graphic segments               | On                 |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                    |  |
|--------------------|--|
| Slab group         | 1  |
| Slabs              | 1  |
| Position           | L2.4 A19.4 H7.5 mm                             |
| Orientation        | Sagittal                                       |
| Phase enc. dir.    | A >> P   |
| AutoAlign          | ---  |
| Phase oversampling | 0 %  |
| Slice oversampling | 10.0 %   |
| Slices per slab    | 160  |
| FoV read           | 160 mm   |
| FoV phase          | 140.0 %  |
| Slice thickness    | 1.00 mm  |
| TR                 | 9000 ms  |
| TE                 | 269 ms   |
| Averages           | 1.0  |
| Concatenations     | 1  |
| Filter             | Raw filter, Distortion<br>Corr.(2D), B1 filter |
| Coil elements      | A32  |

**Contrast - Common**

|                   |                |
|-------------------|----------------|
| TR                | 9000 ms        |
| TE                | 269 ms         |
| MTC               | Off            |
| Magn. preparation | Non-sel. T2-IR |
| TI 1              | 2300 ms        |
| Fat suppr.        | Fat sat.       |
| Fat sat. mode     | Strong         |
| Blood suppr.      | Off            |
| Restore magn.     | Off            |

**Contrast - Dynamic**

|                 |                  |
|-----------------|------------------|
| Averages        | 1.0              |
| Reconstruction  | Magnitude        |
| Measurements    | 1                |
| Multiple series | Each measurement |

**Resolution - Common**

|                       |         |
|-----------------------|---------|
| FoV read              | 160 mm  |
| FoV phase             | 140.0 % |
| Slice thickness       | 1.00 mm |
| Base resolution       | 160     |
| Phase resolution      | 100 %   |
| Slice resolution      | 100 %   |
| Phase partial Fourier | Allowed |

**Resolution - Common**

|                       |     |
|-----------------------|-----|
| Slice partial Fourier | Off |
| Interpolation         | Off |

**Resolution - iPAT**

|                     |            |
|---------------------|------------|
| PAT mode            | CAIPIRINHA |
| Accel. factor PE    | 3          |
| Ref. lines PE       | 32         |
| Accel. factor 3D    | 2          |
| Ref. lines 3D       | 24         |
| Reordering Shift 3D | 0          |
| Reference scan mode | Integrated |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | On  |
| Mode              | 2D  |
| Unfiltered images | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | On  |
| Unfiltered images | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | On  |
| Elliptical filter | Off |

**Geometry - Common**

|                    |                    |
|--------------------|--------------------|
| Slab group         | 1                  |
| Slabs              | 1                  |
| Position           | L2.4 A19.4 H7.5 mm |
| Orientation        | Sagittal           |
| Phase enc. dir.    | A >> P             |
| Slice oversampling | 10.0 %             |
| Slices per slab    | 160                |
| FoV read           | 160 mm             |
| FoV phase          | 140.0 %            |
| Slice thickness    | 1.00 mm            |
| TR                 | 9000 ms            |
| Series             | Ascending          |
| Concatenations     | 1                  |

**Geometry - AutoAlign**

|                     |                    |
|---------------------|--------------------|
| Slab group          | 1                  |
| Position            | L2.4 A19.4 H7.5 mm |
| Orientation         | Sagittal           |
| Phase enc. dir.     | A >> P             |
| AutoAlign           | ---                |
| Initial Position    | L2.4 A19.4 H7.5    |
| L                   | 2.4 mm             |
| A                   | 19.4 mm            |
| H                   | 7.5 mm             |
| Initial Rotation    | 0.00 deg           |
| Initial Orientation | Sagittal           |

**Geometry - Saturation**

|               |          |
|---------------|----------|
| Fat suppr.    | Fat sat. |
| Fat sat. mode | Strong   |
| Restore magn. | Off      |
| Special sat.  | None     |

**Geometry - Navigator****System - Miscellaneous**

|                     |                  |
|---------------------|------------------|
| Positioning mode    | FIX              |
| Table position      | H                |
| Table position      | 0 mm             |
| MSMA                | S - C - T        |
| Sagittal            | R >> L           |
| Coronal             | A >> P           |
| Transversal         | F >> H           |
| Coil Combine Mode   | Adaptive Combine |
| Save uncombined     | Off              |
| Matrix Optimization | Off              |
| AutoAlign           | ---              |
| Coil Select Mode    | Default          |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|             |                    |
|-------------|--------------------|
| Position    | L2.4 A19.4 H7.5 mm |
| Orientation | Sagittal           |
| Rotation    | 90.00 deg          |
| F >> H      | 160 mm             |
| A >> P      | 224 mm             |
| R >> L      | 160 mm             |
| Reset       | Off                |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | High           |
| Img. Scale Cor.     | 5.000          |
| Reset               | Off            |
| ? Ref. amplitude 1H | 0.000 V        |

**Physio - Signal1**

|                 |         |
|-----------------|---------|
| 1st Signal/Mode | None    |
| Trigger delay   | 0 ms    |
| TR              | 9000 ms |
| Concatenations  | 1       |

**Physio - Cardiac**

|                   |                |
|-------------------|----------------|
| Magn. preparation | Non-sel. T2-IR |
| TI 1              | 2300 ms        |
| Fat suppr.        | Fat sat.       |
| Dark blood        | Off            |
| FoV read          | 160 mm         |
| FoV phase         | 140.0 %        |
| Phase resolution  | 100 %          |

**Physio - PACE**

|                |     |
|----------------|-----|
| Resp. control  | Off |
| Concatenations | 1   |

**Inline - Common**

|              |     |
|--------------|-----|
| Subtract     | Off |
| Measurements | 1   |
| StdDev       | Off |

**Inline - Common**

|                      |    |
|----------------------|----|
| Save original images | On |
|----------------------|----|

**Inline - MIP**

|                      |     |
|----------------------|-----|
| MIP-Sag              | Off |
| MIP-Cor              | Off |
| MIP-Tra              | Off |
| MIP-Time             | Off |
| Save original images | On  |

**Inline - Composing**

|                   |     |
|-------------------|-----|
| Distortion Corr.  | On  |
| Mode              | 2D  |
| Unfiltered images | Off |

**Sequence - Part 1**

|                     |           |
|---------------------|-----------|
| Introduction        | On        |
| Dimension           | 3D        |
| Elliptical scanning | Off       |
| Reordering          | Linear    |
| Flow comp.          | No        |
| Echo spacing        | 3.58 ms   |
| Adiabatic-mode      | Off       |
| Bandwidth           | 727 Hz/Px |

**Sequence - Part 2**

|                     |          |
|---------------------|----------|
| Echo train duration | 659 ms   |
| RF pulse type       | Low SAR  |
| Gradient mode       | Fast     |
| Excitation          | Non-sel. |
| Flip angle mode     | T2 var   |
| Turbo factor        | 220      |

**Sequence - Assistant**

|               |       |
|---------------|-------|
| Allowed delay | 120 s |
|---------------|-------|

\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\rslh\_ep3d\_1104\_1p01

TA: 0:43 PM: FIX Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : nih5k

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| AutoAlign       | ---               |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |
| TE 1            | 24.80 ms          |
| Averages        | 1                 |
| Filter          | None              |
| Coil elements   | A32               |

**Contrast - Common**

|                    |                 |
|--------------------|-----------------|
| TR 1               | 76.1 ms         |
| TR 2               | 6404 ms         |
| TE 1               | 24.80 ms        |
| Multi-echo spacing | 53.4 ms         |
| Magn. preparation  | Non-sel. HSN IR |
| TI 1               | 1629.8 ms       |
| TI 2               | 4369.4 ms       |
| Flip angle         | 57 deg          |
| Fat suppr.         | Fat sat.        |
| Magn. Prep. Shots  | 1               |

**Contrast - Dynamic**

|                     |             |
|---------------------|-------------|
| Averages            | 1           |
| Averaging mode      | Short term  |
| Reconstruction      | Magn./Phase |
| Measurements        | 5           |
| Pause after meas. 1 | 0.0 s       |
| Pause after meas. 2 | 0.0 s       |
| Pause after meas. 3 | 0.0 s       |
| Pause after meas. 4 | 0.0 s       |

**Resolution - Common**

|                  |         |
|------------------|---------|
| FoV read         | 175 mm  |
| FoV phase        | 100.0 % |
| Slice thickness  | 0.84 mm |
| Base resolution  | 206     |
| Phase resolution | 100 %   |

**Resolution - Common**

|                       |       |
|-----------------------|-------|
| Slice resolution      | 100 % |
| Phase partial Fourier | 6/8   |
| Slice partial Fourier | Off   |
| Interpolation         | Off   |

**Resolution - iPAT**

|                      |               |
|----------------------|---------------|
| PAT mode             | CAIPIRINHA    |
| Acc. factor PE       | 1             |
| Ref. lines PE        | 63            |
| Acc. factor 3D       | 3             |
| Ref. lines 3D        | 36            |
| CAIPI 3D Shift       | 1             |
| Reference Scan Mode  | EPI/separate  |
| CAIPI Mode (tooltip) | Skipped-CAIPI |
| Total PAT factor     | 3             |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |

**Geometry - AutoAlign**

|                     |                   |
|---------------------|-------------------|
| Slab group          | 1                 |
| Position            | L0.0 A6.6 F6.1 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | A >> P            |
| AutoAlign           | ---               |
| Initial Position    | L0.0 A6.6 F6.1    |
| L                   | 0.0 mm            |
| A                   | 6.6 mm            |
| F                   | 6.1 mm            |
| Initial Rotation    | 0.00 deg          |
| Initial Orientation | Transversal       |

**Geometry - Saturation**

|                 |          |
|-----------------|----------|
| Saturation mode | Standard |
| Fat suppr.      | Fat sat. |

**System - Miscellaneous**

|                  |     |
|------------------|-----|
| Positioning mode | FIX |
|------------------|-----|

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Save uncombined     | Off            |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|               |                   |
|---------------|-------------------|
| ! Position    | L0.0 A6.6 F6.1 mm |
| ! Orientation | Transversal       |
| ! Rotation    | 0.00 deg          |
| ! A >> P      | 180 mm            |
| ! R >> L      | 180 mm            |
| ! F >> H      | 33 mm             |
| Reset         | Off               |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | Low            |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ! Ref. amplitude 1H | 215.000 V      |

**Sequence - Part 1**

|              |            |
|--------------|------------|
| Introduction | On         |
| Dimension    | 3D         |
| Reordering   | Linear     |
| Contrasts    | 1          |
| Echo spacing | 1.01 ms    |
| Bandwidth    | 1104 Hz/Px |

**Sequence - Part 2**

|               |           |
|---------------|-----------|
| EPI factor    | 52        |
| Segmentation  | 3         |
| RF pulse type | Normal    |
| Gradient mode | Fast      |
| Excitation    | Slab-sel. |
| RF spoiling   | On        |
| Turbo factor  | 36        |

**Sequence - Special**

|                    |         |
|--------------------|---------|
| PATRef FA          | 3 deg   |
| RF duration        | 2000 us |
| RF BWT product     | 8       |
| Ernst T1           | 1200 ms |
| PATRef prep. shots | 10      |
| Volume dummy shots | 0       |
| Dummy Measurements | 0       |
| ETL per RTEB       | 1       |
| Invert PE          | Off     |

**Sequence - Special**

|                       |             |
|-----------------------|-------------|
| Min. TE if PF         | On          |
| Echo Time Shift       | On          |
| Ramp Sampling         | On          |
| NORDIC                | On          |
| SVDPC                 | Off         |
| Sym VASO              | Off         |
| Dual-pol. EPI         | On          |
| Invert RO             | Off         |
| Invert 3D             | Off         |
| Disable PF reco       | Off         |
| Disable PF reco       | Off         |
| Save sampling         | Off         |
| PE VComp              | Off         |
| Water Exc.            | -none-      |
| External PC           | per Series  |
| Saturation RF         | per Shot    |
| FIDNavs               | -none-      |
| EPI rise time factor  | 1.10        |
| Mosaic DICOMs         | On          |
| Modify Ice Config     | On          |
| G-factor map          | Off         |
| GRAPPA Regularization | 50000 10^-6 |
| HSN RF power scale    | 3.00        |
| Inversion Delay       | 250 ms      |
| Relaxation Delay      | 0 ms        |
| Var. FA /MAGEC        | 4           |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|

\\USER\NIMH\XT-ID:93-M-0170\Renzo\20240607\_3RD\_ORDER\_SHIM\rslh\_ep3d\_1516\_1p08

TA: 0:44 PM: FIX Voxel size: 0.8×0.8×0.8 mmPAT: 3 Rel. SNR: 1.00 : nih5k

**Properties**

|   |                    |
|---|--------------------|
| Prio recon                                    | Off                |
| Load images to viewer                         | On                 |
| Inline movie                                  | Off                |
| Auto store images                             | On                 |
| Load images to stamp segments                 | Off                |
| Load images to graphic segments               | Off                |
| Auto open inline display                      | Off                |
| Auto close inline display                     | Off                |
| Start measurement without further preparation | Off                |
| Wait for user to start                        | Off                |
| Start measurements                            | Single measurement |

**Routine**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| AutoAlign       | ---               |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |
| TE 1            | 24.80 ms          |
| Averages        | 1                 |
| Filter          | None              |
| Coil elements   | A32               |

**Contrast - Common**

|                    |                 |
|--------------------|-----------------|
| TR 1               | 76.1 ms         |
| TR 2               | 6404 ms         |
| TE 1               | 24.80 ms        |
| Multi-echo spacing | 60.2 ms         |
| Magn. preparation  | Non-sel. HSN IR |
| TI 1               | 1629.8 ms       |
| TI 2               | 4369.4 ms       |
| Flip angle         | 57 deg          |
| Fat suppr.         | Fat sat.        |
| Magn. Prep. Shots  | 1               |

**Contrast - Dynamic**

|                     |             |
|---------------------|-------------|
| Averages            | 1           |
| Averaging mode      | Short term  |
| Reconstruction      | Magn./Phase |
| Measurements        | 5           |
| Pause after meas. 1 | 0.0 s       |
| Pause after meas. 2 | 0.0 s       |
| Pause after meas. 3 | 0.0 s       |
| Pause after meas. 4 | 0.0 s       |

**Resolution - Common**

|                  |         |
|------------------|---------|
| FoV read         | 175 mm  |
| FoV phase        | 100.0 % |
| Slice thickness  | 0.84 mm |
| Base resolution  | 206     |
| Phase resolution | 100 %   |

**Resolution - Common**

|                       |       |
|-----------------------|-------|
| Slice resolution      | 100 % |
| Phase partial Fourier | 6/8   |
| Slice partial Fourier | Off   |
| Interpolation         | Off   |

**Resolution - iPAT**

|                      |               |
|----------------------|---------------|
| PAT mode             | CAIPIRINHA    |
| Acc. factor PE       | 1             |
| Ref. lines PE        | 63            |
| Acc. factor 3D       | 3             |
| Ref. lines 3D        | 36            |
| CAIPI 3D Shift       | 1             |
| Reference Scan Mode  | EPI/separate  |
| CAIPI Mode (tooltip) | Skipped-CAIPI |
| Total PAT factor     | 3             |

**Resolution - Filter Image**

|                   |     |
|-------------------|-----|
| Image Filter      | Off |
| Distortion Corr.  | Off |
| Prescan Normalize | Off |
| Normalize         | Off |
| B1 filter         | Off |

**Resolution - Filter Rawdata**

|                   |     |
|-------------------|-----|
| Raw filter        | Off |
| Elliptical filter | Off |

**Geometry - Common**

|                 |                   |
|-----------------|-------------------|
| Slab group      | 1                 |
| Slabs           | 1                 |
| Position        | L0.0 A6.6 F6.1 mm |
| Orientation     | Transversal       |
| Phase enc. dir. | A >> P            |
| Slab Scale      | -10 %             |
| Slices per slab | 36                |
| FoV read        | 175 mm            |
| FoV phase       | 100.0 %           |
| Slice thickness | 0.84 mm           |
| TR 1            | 76.1 ms           |
| TR 2            | 6404 ms           |

**Geometry - AutoAlign**

|                     |                   |
|---------------------|-------------------|
| Slab group          | 1                 |
| Position            | L0.0 A6.6 F6.1 mm |
| Orientation         | Transversal       |
| Phase enc. dir.     | A >> P            |
| AutoAlign           | ---               |
| Initial Position    | L0.0 A6.6 F6.1    |
| L                   | 0.0 mm            |
| A                   | 6.6 mm            |
| F                   | 6.1 mm            |
| Initial Rotation    | 0.00 deg          |
| Initial Orientation | Transversal       |

**Geometry - Saturation**

|                 |          |
|-----------------|----------|
| Saturation mode | Standard |
| Fat suppr.      | Fat sat. |

**System - Miscellaneous**

|                  |     |
|------------------|-----|
| Positioning mode | FIX |
|------------------|-----|

**System - Miscellaneous**

|                     |                |
|---------------------|----------------|
| Table position      | H              |
| Table position      | 0 mm           |
| MSMA                | S - C - T      |
| Sagittal            | R >> L         |
| Coronal             | A >> P         |
| Transversal         | F >> H         |
| Coil Combine Mode   | Sum of Squares |
| Save uncombined     | Off            |
| Matrix Optimization | Off            |
| AutoAlign           | ---            |
| Coil Select Mode    | Default        |

**System - Adjustments**

|                          |          |
|--------------------------|----------|
| B0 Shim mode             | Brain    |
| B1 Shim mode             | TrueForm |
| Confirm freq. adjustment | Off      |
| Assume Dominant Fat      | Off      |
| Assume Silicone          | Off      |
| Adjustment Tolerance     | Auto     |

**System - Adjust Volume**

|               |                   |
|---------------|-------------------|
| ! Position    | L0.0 A6.6 F6.1 mm |
| ! Orientation | Transversal       |
| ! Rotation    | 0.00 deg          |
| ! A >> P      | 180 mm            |
| ! R >> L      | 180 mm            |
| ! F >> H      | 33 mm             |
| Reset         | Off               |

**System - Tx/Rx**

|                     |                |
|---------------------|----------------|
| Frequency 1H        | 297.188271 MHz |
| Correction factor   | 1              |
| Gain                | Low            |
| Img. Scale Cor.     | 1.000          |
| Reset               | Off            |
| ! Ref. amplitude 1H | 215.000 V      |

**Sequence - Part 1**

|              |            |
|--------------|------------|
| Introduction | On         |
| Dimension    | 3D         |
| Reordering   | Linear     |
| Contrasts    | 1          |
| Echo spacing | 1.14 ms    |
| Bandwidth    | 1516 Hz/Px |

**Sequence - Part 2**

|               |           |
|---------------|-----------|
| EPI factor    | 52        |
| Segmentation  | 3         |
| RF pulse type | Normal    |
| Gradient mode | Fast      |
| Excitation    | Slab-sel. |
| RF spoiling   | On        |
| Turbo factor  | 36        |

**Sequence - Special**

|                    |         |
|--------------------|---------|
| PATRef FA          | 3 deg   |
| RF duration        | 2000 us |
| RF BWT product     | 8       |
| Ernst T1           | 1200 ms |
| PATRef prep. shots | 10      |
| Volume dummy shots | 0       |
| Dummy Measurements | 0       |
| ETL per RTEB       | 1       |
| Invert PE          | Off     |

**Sequence - Special**

|                       |             |
|-----------------------|-------------|
| Min. TE if PF         | On          |
| Echo Time Shift       | On          |
| Ramp Sampling         | On          |
| NORDIC                | On          |
| SVDPC                 | Off         |
| Sym VASO              | Off         |
| Dual-pol. EPI         | On          |
| Invert RO             | Off         |
| Invert 3D             | Off         |
| Disable PF reco       | Off         |
| Disable PF reco       | Off         |
| Save sampling         | Off         |
| PE VComp              | Off         |
| Water Exc.            | -none-      |
| External PC           | per Series  |
| Saturation RF         | per Shot    |
| FIDNavs               | -none-      |
| EPI rise time factor  | 1.10        |
| Mosaic DICOMs         | On          |
| Modify Ice Config     | On          |
| G-factor map          | Off         |
| GRAPPA Regularization | 50000 10^-6 |
| HSN RF power scale    | 3.00        |
| Inversion Delay       | 250 ms      |
| Relaxation Delay      | 0 ms        |
| Var. FA /MAGEC        | 4           |

**Sequence - Assistant**

|      |     |
|------|-----|
| Mode | Off |
|------|-----|