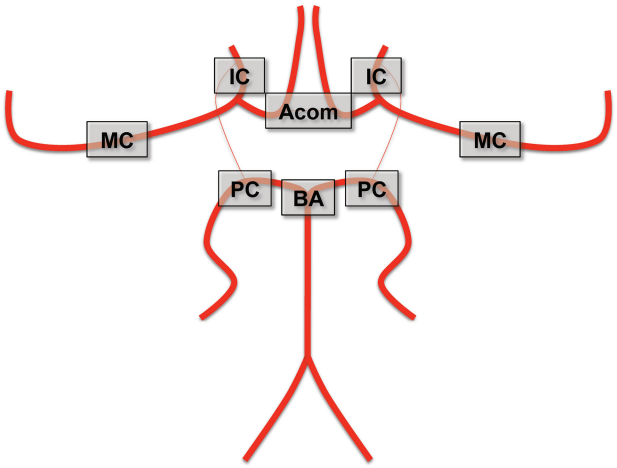
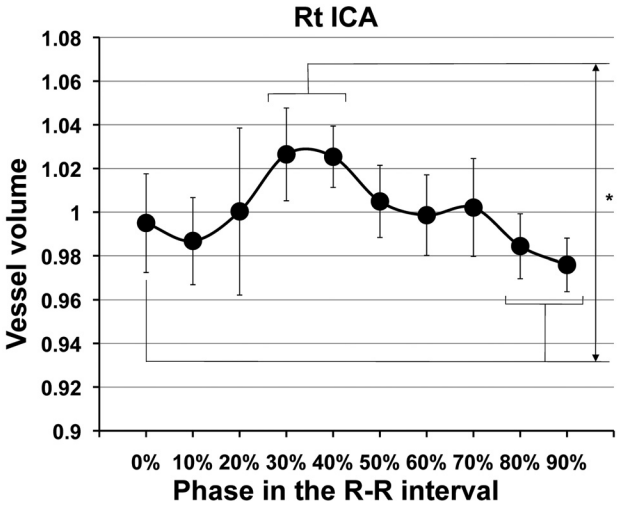
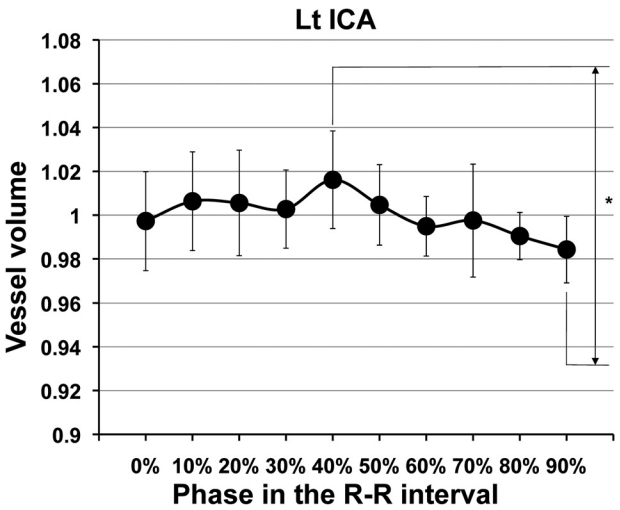


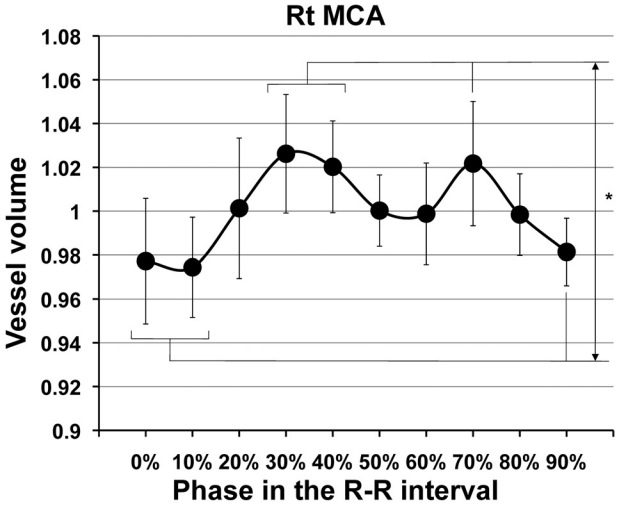
On-line Fig 1. Anatomical illustration of the selected ROIs for motion index and vessel volume change analysis. Eight anatomic locations were selected for analysis.



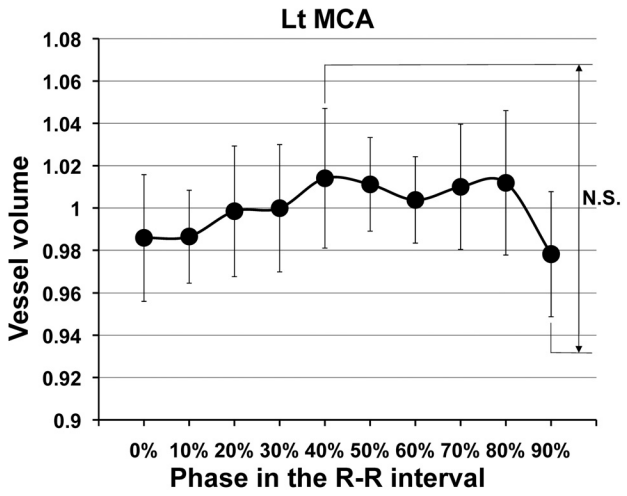
On-line Fig 2. Reconstruction of the pulse wave of the right ICA. The mean ± SD of vessel volume change in the right ICA during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 30% or 40% in the R-R interval, and the second was in 70%. The lowest peak was in 90%. There was a significant difference in the vessel volume between the higher phase and the lower phase. * indicates $P < .05$.



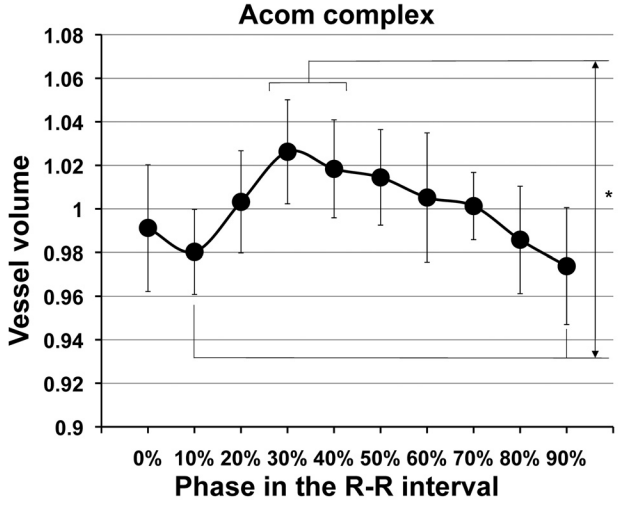
On-line Fig 3. Reconstruction of the pulse wave of the left ICA. The mean ± SD of vessel volume change in the left ICA during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 40% in the R-R interval, and the second was in 70%. The lowest peak was in 90%. There was a significant difference in vessel volume between the higher phase and the lower phase. * indicates $P < .05$.



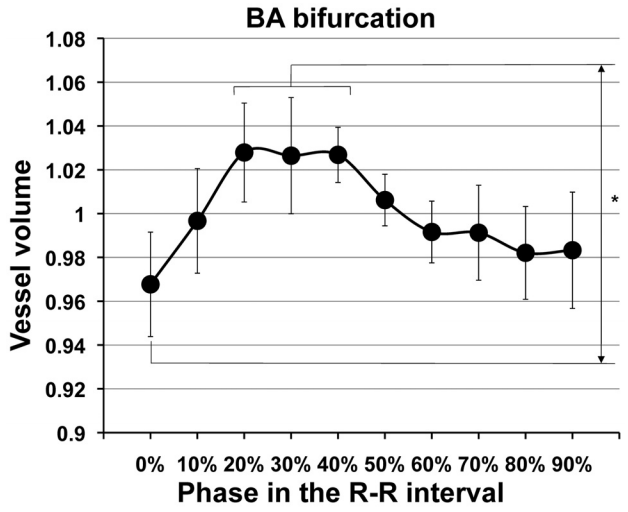
On-line Fig 4. Reconstruction of the pulse wave of the right MCA. The mean ± SD of vessel volume change of the right MCA during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 30% in the R-R interval, and the second was in 70%. The lowest peak was in 10%. There was a significant difference in vessel volume between the higher phase and the lower phase. * indicates $P < .05$.



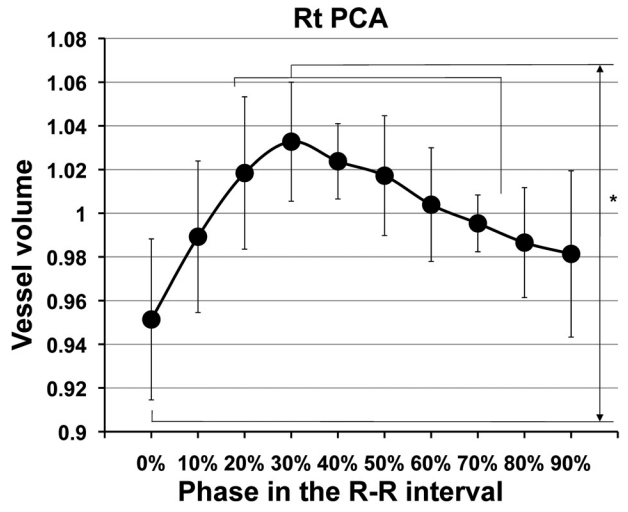
On-line Fig 5. Reconstruction of the pulse wave of the left MCA. The mean ± SD of vessel volume change of the left MCA during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 40% in the R-R interval, and the second was in 80%. The lowest peak was in 90%. There was no significant difference in vessel volume between the higher phase and the lower phase.



On-line Fig 6. Reconstruction of the pulse wave of the Acom. The mean ± SD of vessel volume change of the Acom during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 30% in the R-R interval, and the second was in 70%. The lowest peak was in 90%. There was a significant difference in vessel volume between the higher phase and the lower phase. * indicates $P < .05$.



On-line Fig 7. Reconstruction of the pulse wave of the BA bifurcation. The mean ± SD of vessel volume change of the BA bifurcation during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 30% in the R-R interval, and the second was in 70%. The lowest peak was in 0%. There was a significant difference in vessel volume between the higher phase and the lower phase. * indicates $P < .05$.



On-line Fig 8. Reconstruction of the pulse wave of the right PCA. The mean ± SD of vessel volume change of the right PCA during a single heartbeat of 10 subjects is shown. There were 2 peaks; the first peak was in 40% in the R-R interval, and the second was in 80%. The lowest peak was in 90%. There was a significant difference in vessel volume between the higher phase and the lower phase. * indicates $P < .05$.

On-line Video 1. 3D presentation of the motion map. A short video of the 3-dimensional presentation of the motion map. The "CORE" is red and the "HALO" is translucent white. Locations with less HALO can be identified.

On-line Video 2. Movie showing the pulsations of the cerebral arteries. A short video of the cerebral artery pulsation. This movie was reconstructed using the 4D-CTA data and software provided by Toshiba. Locations with less HALO can be identified.