

# MV blended sensor allows 63-year-old woman to resume her fitness passion

## Patient:

63-year-old woman with an extremely active lifestyle, spending most of her time running, cycling and going to the gym. In 2007 she was diagnosed with paroxysmal Afib and second degree AV block and at that time she also received her first pacemaker, a Medtronic Sensia SEDRL1. Following pacemaker implant the physician prescribed flecainide, but treatment had to be stopped due to side effects. Later in 2007 PV isolation ablation, and afterwards re-ablated and amiodarone prescribed due to Afib and atypical flutter, but the patient still suffered from short runs of Afib/Afl and in January 2011 she was finally His ablated.

## Indications:

Second degree AV block, Mobitz

## Device and evaluation:

Initially when the pacemaker only had to support her AV block, the Medtronic Sensia SEDRL1 served her well, but after she was His ablated and became chronotropically incompetent, the old device did not meet her needs at all. The sensor response was either too high or too low depending on her activity, when cycling it was under responding and when running it was over responding. The device was finally programmed to VVIR because it also did not respond well to the patient's short bursts of atrial tachycardia. After numerous attempts at reprogramming to optimize the sensor response the physician decided to offer the patient a Boston Scientific ALTRUA™ S606 with MV blended sensor, in order to accommodate her various fitness activities.

## Implanting physician:

Arne Johannessen, MD, Gentofte University Hospital, Denmark<sup>1</sup>

## Follow-up and reprogramming:

After the device change the ALTRUA S606 was programmed with AutoLifestyle ON and the settings recommended by AutoLifestyle were used, DDDR 50-160 blended sensor. Also RateSmoothing® (9 up, 6 down) and AFR (170 bpm) were programmed ON, to control the pacemaker response to her atrial tachycardia. At the 1 month Follow-up and wound check, the patient was very happy with the new device. She had felt an immediate improvement and had fully resumed her active lifestyle and remarked that this device felt "a hundred times better than the old one".

## Results:

Using Sensor Trending (Figure 1) shows the actual sensor response (orange line) and heart rate (black line) during a bicycle exercise and an appropriate response is achieved allowing the patient to push herself physically during the training. Figure 2 shows what the sensor response would have been without the MV blended sensor. This is similar to the old device and would not have allowed the patient to continue the bicycle exercise. The rate histograms from the old and new device also show all the difference. Figure 1 shows a majority of pace in the 60-90 bpm range, where the ALTRUA with MV blended sensor paced at a more appropriate level.

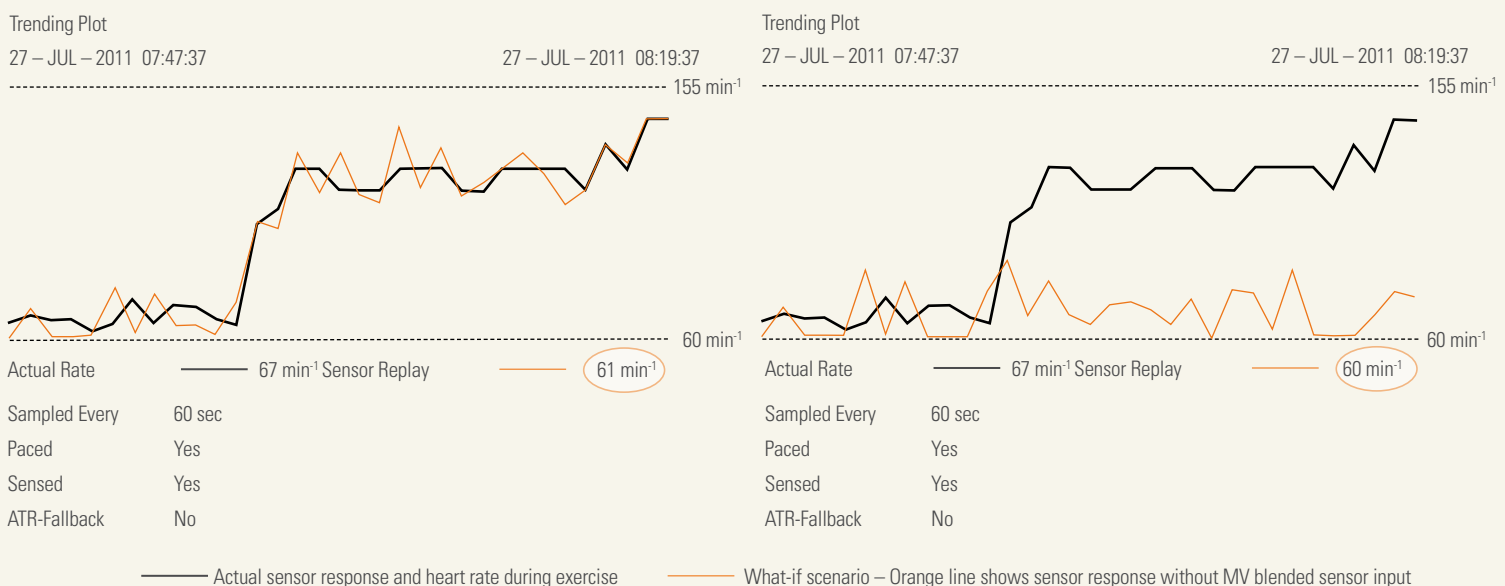
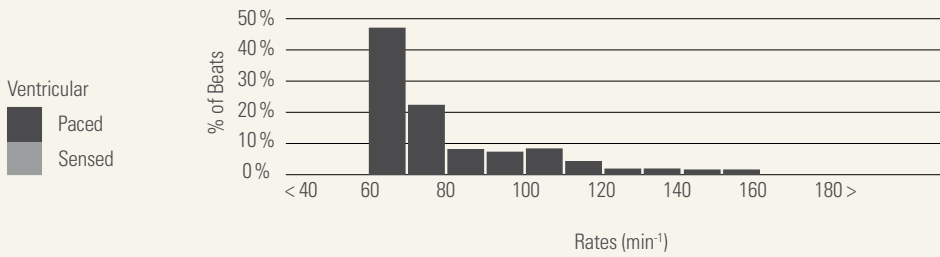


Figure 1 & 2 Sensor Trending with and without MV blended sensor input

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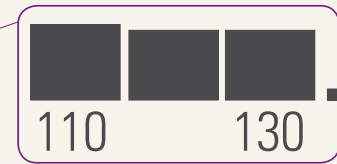
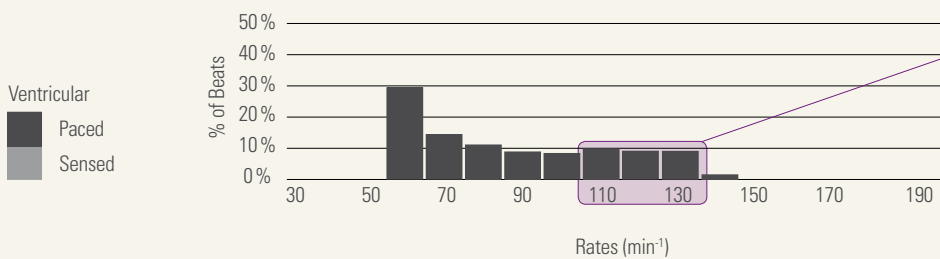


VVIR 60-160, 100 % pace without MV blended sensor. Note primarily pace at LRL & limited activity above 110 bpm.

	Present	Replay	
Lower Rate Limit	60	60	min <sup>-1</sup>
Max Sensor Rate	155	155	min <sup>-1</sup>
AutoLifeStyle	On	On	
Accelerometer	On	On	
Activity Threshold	Medium	Medium	
Reaction Time	30	30	sec
Response Factor	AUTO	8	
Recovery Time	2	2	min
Minute Ventilation	On	On	
Response Factor	AUTO	4	
High Rate Response Factor	70	70	%
High Rate Break Point	115	115	min <sup>-1</sup>

	Present	Replay	
Lower Rate Limit	60	60	min <sup>-1</sup>
Max Sensor Rate	155	155	min <sup>-1</sup>
AutoLifeStyle	On		
Accelerometer	On	On	
Activity Threshold	Medium	Medium	
Reaction Time	30	30	sec
Response Factor	AUTO	8	
Recovery Time	2	2	min
Minute Ventilation	On	Off	
Response Factor	AUTO	4	
High Rate Response Factor	70		%
High Rate Break Point	115		min <sup>-1</sup>

Figure 3 Histograms from Medtronic device without MV blended sensor



DDDR 60-155, 100 % pace with MV sensor. Note much less pace at LRL and more pace from 110-130+ is what makes the difference.

Figure 4 Histograms from ALTRUA™ S606 with MV blended sensor

## Physician commentary:

Pacemaker implantation and His ablation is still an efficient treatment, for the few and very symptomatic Afib patients who have failed (or are not candidates for) PV isolation ablation and antiarrhythmic medication.

Patients with an active lifestyle suffering from chronotropic incompetence induced by His ablation and ongoing atrial fibrillation require a pacemaker with optimal rate response, in order to relieve symptoms during exercise. As in this case, a pacemaker with dual sensors could be the treatment of choice in highly active patient performing non-acceleration sports such as spinning, biking, golfing, fishing or hunting if His ablation is planned due to AFIB/AFLA/EAT.

### References:

<sup>1</sup> Content based on data provided courtesy of Arne Johannessen, MD, Gentofte University Hospital, Denmark does not reflect the opinion of Boston Scientific.

<sup>2</sup> Chronotropic competence is defined by: Wilkoff BL, Corey J, Blackburn G. A mathematical model of cardiac chronotropic response to exercise. J Electrocardiol. 1989;3(3):176-180. Refer to Physician's System Guide for more information on adaptive-rate therapy. Additional clinical performance was assessed using INSIGNIA Ultra clinical data with the AutoLifestyle feature programmed ON. Data on file.

Individual symptoms, situations, and circumstances may vary. Patients should consult a physician or qualified health provider regarding their medical condition and appropriate medical treatment. The information provided is not intended to be used for medical diagnosis or treatment or as a substitute for professional medical advice. This information is to be used in conjunction with other resource material, which may include the applicable patient handbook, Boston Scientific device physician's manual and any implant accessories instructions for use.

Results from case studies are not predictive of results in other cases. Results in other cases may vary. Bench test results may not necessarily be indicative of clinical performance. Data on file at Boston Scientific.

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