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## **Non-pharmacological heart failure therapies : evaluation by ventricular pressure-volume loops**

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# **Non-pharmacological heart failure therapies**

**Evaluation by ventricular pressure-volume loops**

**Sven A.F. Tulner**



# **Non-pharmacological heart failure therapies**

## **Evaluation by ventricular pressure-volume loops**

PROEFSCHRIFT

ter verkrijging van

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op gezag van de Rector Magnificus Dr. D.D. Breimer,  
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geboren te Gouda

in 1973

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The research described in this thesis was performed at the Departments of Cardiology (Head: Prof. dr. E.E. van der Wall) and Cardiothoracic Surgery (Head: Prof. dr. R.A.E. Dion) of the Leiden University Medical Center, Leiden, the Netherlands.

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"How could you describe the heart in words without filling a whole book"

*Leonardo da Vinci, 1513*

Voor mijn ouders

Aan Mies

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Cover image: Front: "Study of the valves and muscles of the heart"; Back: "Section of the heart with the left ventricle and mitral valve" c. 1513 by Leonardo da Vinci, Windsor Castle Royal Library.

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