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Modeling of the Heart Function

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Wave-theory concepts were applied to develop a model of acoustic properties of the human heart (Fig. 1). Theoretical predictions were compared with data obtained from normal children. Heart sounds were recorded and subsequently converted into electrical signals. These signals were Fourier analyzed to determine the amplitudes and the frequencies of various harmonics*.

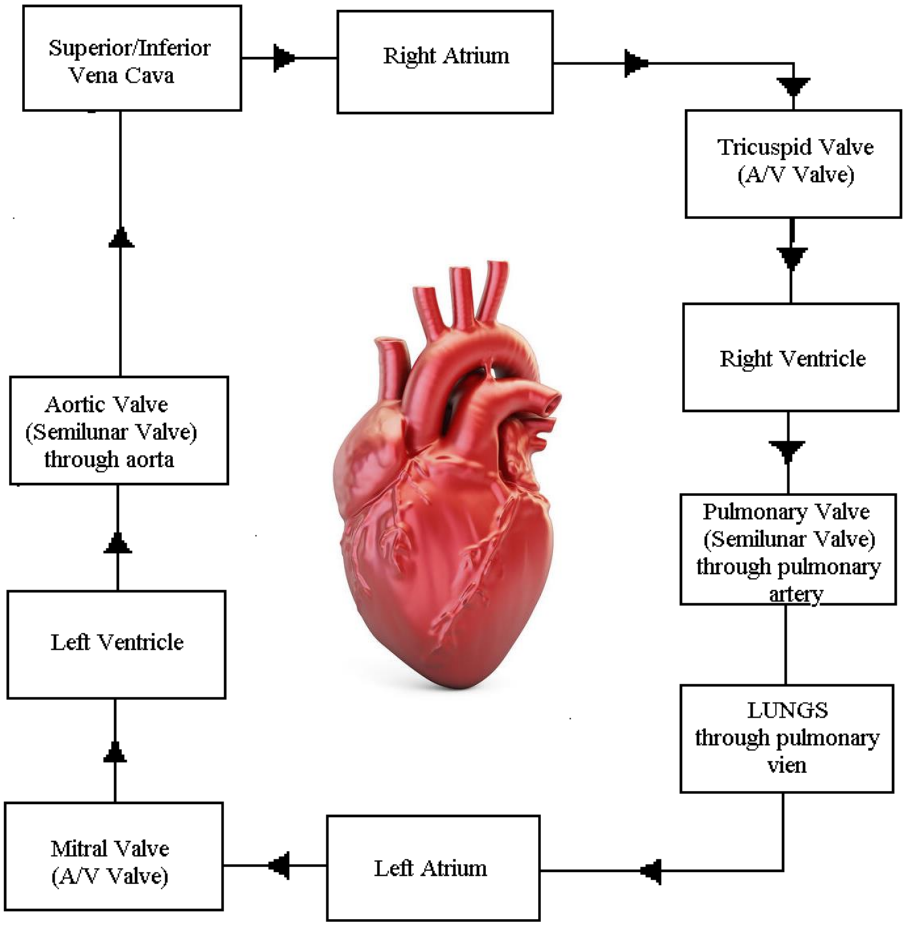

Fig. 1. The cardiac cycle

Keywords: ECG • Fourier analysis • Phonocardiogram • Standing waves

Web address of this document: https://www.ngds-ku.org/Presentations/IHeart_Modeling.pdf

*The results have been published in a conference proceedings as:

Kamal, S. A. and K. A. Siddiqui (1993). Modeling of heart function. *Proceedings of the Symposium on Trends in Physics*, edited by K. A. Siddiqui and M. Rafi), Department of Physics, University of Karachi, Karachi, Pakistan, September 26, 27, 1992, pp. 107-112, full text: https://www.ngds-ku.org/Papers/C39.pdf

and a paper in peer-reviewed journal as:

Kamal, S. A. and K. A. Siddiqui (2002). The human heart as a system of standing weaves. *Karachi University Journal of Science*, **30 (1&2):** 55-63, full text: https://www.ngds-ku.org/Papers/J25.pdf

as well as applied to study a cardiac patient:

Kamal, S. A. (2015). Acute malnutrition in a child suffering from cardiac problems. *International Journal of Biology and Biotechnology*, **12 (4):** 585-600, full text: https://www.ngds-ku.org/Papers/J40.pdf