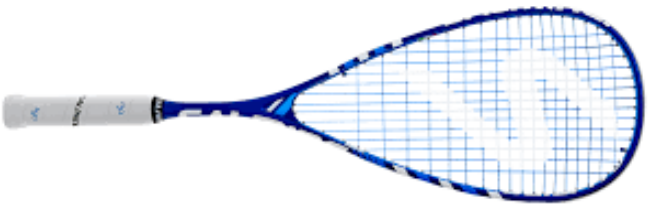
Master's Thesis project
Simulation of badminton rackets

Salming Sports is a high-end manufacturer of squash rackets and intends to continue their racket product line by developing badminton rackets. From its humble beginnings in wood to its current slim geometry in high quality lightweight carbon fiber composites, improvements in the badminton racket have largely been due to material advancements. The link between design and performance remains relatively poorly understood. Current rackets are designed heuristically, based on experience of the manufacturer and the player. The design of a badminton racket requires an understanding of the dynamics of the stroke and how both rigid-body and flexible-body dynamics of the racket, affect performance in terms of power and control.

The purpose of this thesis is to add a scientific perspective to the design of badminton rackets, by studying the underlying physics of racket design through FEM simulations. The work of the thesis is to investigate racket parameters such as stiffness, coefficient of restitution and size of sweet spot and how they relate to different racket responses. This will be done by modelling varying materials, racket geometries and string designs with different FE-modelling techniques. The thesis will also consist of some experimental work to compare the objective results of the simulations with subjective measures of the rackets such as power, feeling and and the consistency of the stroke. The ultimate aim is to be able to predict subjective qualities through CAE simulations.

The master thesis project is intended for 1-2 persons and is a collaboration between FS Dynamics and Salming. The persons performing the project will be situated at FS Dynamics office in Göteborg and will also have a lot of contact with Salming Sports where also most the experimental work will be performed.



FS Dynamics is a focused and independent consultancy company providing highly skilled competence within fluid- and structural dynamic analysis.
Salming Sports is a manufacturer of premium sports equipment

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