

Oral presentation

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Classification of objective aesthetic parameters in idiopathic scoliosis

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Objectives

To use non-invasive surface instruments to define Objective Aesthetic Parameters and to obtain an Aesthetic Classification System in idiopathic Scoliosis.

Background

Aesthetic correction is a main aim in scoliosis treatment as defined by SOSORT. Objectively defining aesthetic parameters is difficult; recently TRACE has been proposed as a possible option, being the standardization of the subjective medical expert evaluation. Objective measures are needed for an automatic classification of aesthetics in scoliosis and for other severe back deformities. A 3D reconstruction of the back surface delivers a set of objective parameters used as a basis for this aesthetic classification.

Methods

The Formetric measurement system reconstructs human back surfaces in semi-real time. From the acquired 3D data a set of objective anatomical and aesthetical parameters, one can automatically calculate:

- shoulder rotation, slope angle and height difference
- scapular symmetry
- symmetry of flanks and waist triangles
- rib humps and asymmetry in waist region

- pelvic displacements

The above parameters form a basis from which classification indexes can be calculated and derived according to a specific set of expert rules.

Results

Especially in severe cases it is possible to transfer the essentials of relative subjective classifications to objective measures and parameters. Vague and hard-to-catch impressions like "it doesn't look good" can to a certain degree be judged by neutral criteria: Shoulder and pelvis symmetry; angles, area- and height-differences of scapula; differences in waist triangles, etc.

Conclusion

The visual impression of aesthetics correlates closely to the objective parameters described above.