



AESTHETIC AND COSMETIC DERMATOLOGY (LASERS SEPARATE CATEGORY)

## QUANTITATIVE MAPPING OF FACIAL AGING PHENOMENA AND THEIR EFFECT ON VISUAL PERCEPTION

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**Introduction:** The visible signs of facial skin aging are cumulative and include topographical changes such as the appearance of wrinkling, roughness, sagging and an associated decline in mechanical elasticity. To understand better these phenomena and the effects on visual perception, we performed two large studies in which images of subjects (recruited across a wide age range, within different ethnic groups) were subjected to blinded, crowd-sourced judgement.

**Objective:** The objective of this work was to explore possible relationships between different facial zones / aging features and perceived age / “firmness”. We hypothesized that a decline in skin elasticity would result in significant changes in topography, serving as visual cues for a change in perception of age and “firmness”.

**Materials and Methods:** Physical, optical and mechanical skin properties were measured objectively across different facial zones. Standardized, high-resolution digital imaging was also used to capture facial appearance. An automated, crowd-sourced ranking of facial images was performed, using pair-wise blinded grading, to generate perception data. The correlation between measured skin attributes and crowd-sourced perceptual data was explored.

**Results:** Significant correlations were observed between topographical / optical attributes and perceived age / “firmness”, across different facial zones. Correlation strength varied with subject age and objectively-measured endpoint.

**Conclusions:** Strong relationships have emerged between facial skin biomechanical properties and perceived age and “firmness” – supporting the in-going hypothesis relating to the primary importance of skin elasticity in the ageing process. Consequently, these results suggest that a holistic cosmetic approach targeting multiple facial zones / aging features is required for optimal management of perceived aging.

