

Contribution of different sunglasses frames to the protection against ultraviolet radiation: a suggestion of adaptation for the current standards

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Resumo

Sunglasses are widely used for eye protection against ultraviolet radiation. However, the current Brazilian manufacturing standards, mirrored from a European model, do not consider the country's specific characteristics and only focus on lens spectroscopic conditions. This study evaluates different eyewear frames geometries in relation to scattered light that reaches the eyes through the sides, since the use of sunglasses increase the eye vulnerability due to pupil dilation and facial muscle relaxation. A prototype was developed to calculate this protection by simulating a spherical environment that exposures a mannequin to diffuse radiation. The system's readings have a good linear response in function of the light intensity and can be used to spot sunglasses whose frame geometries block only 91% of the light. In the future, the set of instruments connected to an embedded system and controlled by a graphical interface will also be able to quantify the ultraviolet radiation parcels that depends on the spectroscopic characteristics of the lens, such as transmission and internal reflection.

Palavras-chaves: Sunglasses Frames, Sunglasses Standards, Ultraviolet