



## PRESS RELEASE

---

# How does visually demanding computer work increase eye-related pain?

---

June 2012

Visually demanding computer work is often known to reinforce eye strain including glare and increased squinting. Given the limited number of studies on this topic, there is a need for further research to support this assessment. For this reason, an experiment has been undertaken in Norway by a team of researchers led by Hanne-Mari Schiøtz Thorud to investigate the development of discomfort symptoms in relation to muscle activity and muscle blood flow in the orbicularis oculi muscle during computer work. The results have been published in the American Academy of Optometry journal "Optometry and Vision Science" in April 2012.

In order to undertake this study, a group of healthy young adults with normal vision has been selected at random. During a 2-hours working session, eye-related symptoms were recorded on a laptop. The young adults selected for the study were exposed to visual stressors, for instance, to glare and small font. The techniques of electromyography and photoplethysmography enabled to measure respectively the muscle load and blood flow. At the end of the session, the levels of eye-related symptoms before and after the 2-hours experience were compared.

In terms of results, an important increase of muscle load in orbicularis oculi above baseline and stable at 1 to 1.5 % maximal voluntary contractions was noticed during the working sessions. Orbicularis oculi muscle blood flow increased significantly during the first part of the experience before returning to baseline. There were also positive correlations between eye-related tiredness and orbicularis oculi muscle load and eye-related pain and muscle blood flow. Subjects with eye-related pain showed elevated orbicularis oculi muscle blood flow during computer work, but no differences in muscle load compared with subjects experiencing minimal pain.

Consistently demanding computer work engendered eyestrain related to the orbicularis muscle. Based on the study, the searchers conclude that low-force exercise is linked to an

increase in muscle blood flow and/or in mental stress level in subjects experiencing pains compared with subjects with minimal pain. These conclusions would support a regular eye examination by an optometrist and wearing glasses during demanding computer working hours for subjects with eye-related pain and mental stress symptoms.

### **Notes for editors**

The study on “Does visually demanding computer work increase eye-related pain?” was carried out by Hanne-Marie Schiøtz Thorud, Magne Helland, Arne Aaras, Tor Martin Kvikstad, Lars Goran Lindberg, and Gunnar Horgen from the Department of Optometry and Visual Science at the Buskerud University College in Kongsberg, Norway. It was published in “Optometry and Vision Science”, Vol. 89, No. 4, pp. E452-E464.

### **About ECOO**

The European Council of Optometry and Optics (ECOO) is the European organisation which represents the interests of optometrists and opticians from 30 countries. It aims to promote eye health to the public across borders and to harmonise clinical and educational standards of optometric and optical practice throughout Europe.

### **Contact**

European Council of Optometry and Optics (ECOO)  
President: Armin Duddek, Dipl. Augenoptiker SBAO, ISCLS, VDCO (Switzerland)  
Vice-President: Dr. Julie-Anne Little (UK)  
Secretary General: Dr. Ulrich Adam (Belgium)  
Rue Montoyer 51, box 7  
B-1000 Brussels  
T +32 (0)2 739 16 15  
F +32 (0)2 737 95 01  
Email: [secretariat@ecoo.info](mailto:secretariat@ecoo.info)

\*\*\*