

Title: Workplace interventions to prevent musculoskeletal and visual symptoms and disorders among computer users: A systematic review

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Abstract:

Background:

Visual symptoms and musculoskeletal (MSK) disorders are common occupational health complaints among computer users. The literature examining the effects of workstation, eyewear and behavioural interventions on musculoskeletal and visual symptoms among computer users is large and heterogeneous. The primary question addressed by this systematic review was: “Do office interventions among computer users have an effect on MSK and visual health status?”

Methods:

Four English language databases were searched for relevant articles published or in press from peer-reviewed scientific literature, from 1980 onward. Study relevance was determined by reviewing titles, abstracts and, where necessary, the full text of articles. Studies were considered relevant if they reported on an intervention in an office setting related to computer use with health outcomes and comparison groups. The studies that met relevance criteria were assessed for methodological quality using 19 quality criteria. The criteria were weighted (on a scale of 1 to 3) according to the importance of each item as decided by the entire review team. Given the heterogeneity of the studies found, a best evidence synthesis approach was used to synthesize evidence. The best evidence synthesis approach used considers the quality of the studies, the quantity of studies and the consistency of the findings among studies. “Quality” refers to the methodological strength of the studies. “Quantity” refers to the number of studies that provide evidence about the same intervention. “Consistency” refers to the similarity of results observed across the studies on an intervention.

Results:

The initial search identified 7313 articles which were reduced to 31 studies based on relevance. Nine studies were classified as high quality and 22 as medium quality according to the weighted quality criteria. No studies were classified as low quality. The synthesis across all studies suggests a mixed level of evidence for the effect of ergonomic interventions on MSK outcomes or visual symptoms. Moderate evidence was observed for: (1) workstation adjustments having no effect, (2) rest breaks with exercise having no effect and (3) alternative pointing devices having a positive effect. The evidence on alternative pointing devices is aggregated across studies examining quite different pointing devices. Care should be taken in making recommendations about specific pointing devices. For all other interventions mixed or insufficient evidence of effect was observed.

Conclusion:

The current study represents the most comprehensive review to date of the literature about office ergonomic interventions in relation to MSK and visual health outcomes. The conclusions about levels of evidence for office interventions in this review come from a highly systematic and transparent approach of searching and synthesizing the literature. The review team suggests stronger levels of evidence are needed to make policy or best practices recommendations. Few high quality studies were found that examined the effects of interventions in the office on musculoskeletal or visual health. The overwhelming message from this review is that more high quality intervention research is needed. Well-designed studies, such as randomized controlled trials with adequate sample sizes and study durations are required before stronger conclusions regarding interventions can be drawn.