



MYTH-BUSTING THE 20/20/20 RULE



Many regularly recommend this guideline to patients, but what do the data actually say about it?

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Digital devices are prevalent in nearly every aspect of modern life.¹ Computers, tablets, and smart phones are used every day for employment and leisure and are typically carried by patients everywhere, as they can be used for a multitude of tasks and are often conveniently pocket-sized.

Although digital devices have several advantages, they are often associated

with the development of digital eye strain (DES).² Myopia is another condition that may be influenced by the overuse of digital devices. The 20/20/20 rule is a commonly discussed practice for preventing digital device-related issues, but a review of the relevant literature shows relatively little data actually supporting it.² This article reviews the evidence related to the use of this rule for treating DES and myopia.

THE 20/20/20 RULE: A REFRESHER

The 20/20/20 rule was first proposed by Anshel in the late 1990s and suggests that patients should take a 20-second break every 20 minutes to look 20 feet away while using digital devices.^{5,6} Many clinicians, patients, and eye care organizations have since touted the benefits of this rule and have attempted to apply it as a treatment for DES and myopia (see *Digital Device Use and Myopia* for information on how digital devices may affect myopia progression).^{2,7,8}

WHAT DOES THE LITERATURE SAY?

DES, formerly termed *computer vision syndrome*, was recently defined by a Tear Film & Ocular Surface Society (TFOS) Workshop, titled “A Lifestyle Epidemic: Ocular Surface Disease,” as “the development or exacerbation of recurrent ocular symptoms and/or signs related specifically to digital device screen viewing.”² DES is associated with an assortment of symptoms, such as eye strain, visual blur, ocular dryness, heavy

eyelids, double vision, headaches, eye redness, and light sensitivity,^{2,3} and it can negatively affect quality of life and academic or work performance.⁴ DES is typically diagnosed based on patient history or using standardized tools, such as the Computer Vision Syndrome Questionnaire.³ Up to 97% of digital device users experience DES, although this prevalence varies widely depending on how a study defines the condition.²

Survey-Based Studies

DES became an area of particular focus during the COVID-19 pandemic because many individuals were forced to operate in a mostly virtual environment. This event likely sparked the recent interest in evaluating the merits of the 20/20/20 rule as a treatment.^{9,10}

Huyhua-Gutierrez et al evaluated a group of 796 Peruvian nursing students with a questionnaire aimed at understanding DES and the 20/20/20 rule.⁹ The authors first diagnosed DES with the Computer Vision Syndrome Questionnaire and further evaluated the condition with an investigator-developed survey. The authors determined that if participants practiced the 20/20/20 rule, they were significantly less likely to have DES.

Notably, only 13.1% of participants had an awareness of the 20/20/20 rule prior to the study.⁹ The limited initial participant knowledge of the rule is important to note, as this aspect of the study may have resulted in a false positive result due to selection bias.

Datta et al also completed a survey-based study in India, which sought to understand the frequency with which the 20/20/20 rule was practiced and whether there was an association between symptoms of participants and following this specific guidance.⁸ The authors determined that 8.8% of participants (n = 432) practiced the 20/20/20 rule and found there was no difference in overall symptoms between those who did and did not practice the rule, although those who practiced it were significantly less likely to have burning sensation or headaches compared with nonpracticing participants.⁸

Each of these survey-based studies was limited by not having standardized treatment conditions, by recall bias, and by potential selection bias among those who had prior knowledge of the 20/20/20 rule.

Prospective Studies

Johnson and Rosenfield prospectively evaluated the 20/20/20 rule in young adults who were divided

into four different groups and asked to complete a demanding 40-minute reading task.¹³ Participants (n = 30) were asked to take 20-second reading breaks at either 5-, 10-, 20-, or 40-minute intervals and were instructed to look out the window during the breaks. The authors determined that, overall, there was no significant difference in reading speed, reading accuracy, or DES symptoms between the different testing sessions. The investigators found the same results when they evaluated only the most symptomatic participants.

Talens-Estrelles et al¹⁴ performed a similar study in which they loaded a software program on to participants' (n = 35) computers to remind them to take breaks, according to the 20/20/20 rule. During the first 2 weeks of the study, participants were instructed to use their computers with the 20/20/20 rule program disabled, and the program was subsequently turned on for the following 2 weeks. The authors determined that, overall, there was no significant difference in visual acuity, accommodative posture, stereopsis, fixation disparity, ocular alignment, fusional vergences (positive and negative), or near point of convergence between the two periods. However, the authors found that tests of binocular accommodative facility improved post-treatment.

The researchers also determined that dry eye symptoms, as measured with the Ocular Surface Disease Index, Dry Eye Questionnaire-5, and Symptom Assessment Questionnaire in Dry Eye, improved after the 2-week period using the programmed reminders. Nonetheless, it is unclear whether these dry eye symptoms clinically improved,^{11,12} as the authors did not find a significant change in any dry eye sign they evaluated (eg, blink rate, corneal staining). Furthermore, the study evaluated only 20-second-long breaks; thus, it is unclear whether other break durations would have been preferred.

AT A GLANCE

- ▶ Digital eye strain is associated with an assortment of symptoms, such as eye strain, visual blur, ocular dryness, heavy eyelids, double vision, headaches, eye redness, and light sensitivity.
- ▶ Many have touted the benefits of the 20/20/20 rule as a treatment for digital device-related issues, but the relevant data are unclear.
- ▶ In one study, there was no significant difference in visual acuity, accommodative posture, stereopsis, fixation disparity, ocular alignment, fusional vergences (positive and negative), or near point of convergence after participants followed the 20/20/20 rule for 2 weeks.

DIGITAL DEVICE USE AND MYOPIA



The prevalence of myopia is increasing worldwide, and this increase is primarily attributed to the environment.¹ Although there are strong data discounting reading as a stimulus for myopic development,^{2,3} some research has linked near visual tasks to developing myopia.⁴

One theory is that near visual scenes, such as an office or classroom setting, place varying dioptric demands on the retinal surface (which is never dioptrically flat), possibly producing peripheral retinal hyperopic defocus. This effect is thought to be a myopic growth signal.^{5,6}

Because distance visual scenes are dioptrically flat, even if they are rich in detail (resulting in minimal retinal blur in visually corrected patients),⁵ it is possible that having patients follow the 20/20/20 rule could reduce myopigenic signals and subsequent myopic development or progression. Although the data on this effect are limited, Pucker and Gawne recently commented on this topic,⁷ concluding that, based on studies in animal models, anti-myopic visual stimuli likely need to be present for at least 5 minutes every hour at roughly optical infinity to be beneficial.

NOT THE BE-ALL AND END-ALL

Although the 20/20/20 rule is catchy and easy to remember,⁶ there is limited data supporting the specific numbers composing this rule. However, there are data suggesting that taking near work breaks may be beneficial for reducing digital eye strain and preventing myopic development. Therefore, when educating patients about near work, I simply suggest taking regular breaks, rather than prescribing a rigid routine. This may not only promote compliance, but also simplify our patients' lives, while promoting their visual and physical health. ■

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