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# Reading without your glasses: a new scientific study confirms the GlassesOff program's efficiency in improving one's visual acuity.

*The recent study called « Control placebo study to test the efficacy of the GlassesOff scientific engine and mobile application », reveals that 90% of users have reached the expected target: doubling their near visual acuity performance after 35 training sessions. The results are presented here.*

**NEW YORK, March 15, 2017** - After thirty years of research in the neuroscience field, and numerous articles in top scientific magazines, the neurotechnology company InnoVision Labs Inc. has started developing and releasing to market a scientific platform called GlassesOff. The unique smartphone application, supporting both IOS and Android aims at improving one's near vision performance and eventually getting rid of reading glasses. The training program is of the highest efficiency since it adapts to each and every visual profile.
This new scientific study, held together with the Tel Aviv University, the Sackler Faculty of Medicine, the Sheba Medical Center, the Goldschleger Eye Research Institute and InnoVision Labs Inc, evaluates the differences between the GlassesOff program and a similar, non-personalized one.

**GlassesOff technology** works on the brain plasticity. Through entertaining exercises, users can compensate optical deficiencies due to normal ageing, by improving their brain's capacity to deal with the images that it receives.

**The Control Placebo study** compares the GlassesOff training to a similar but non-personalized program, in individuals aged 40+ with reduced near visual acuity. The results are presented after two months and 35 training sessions.
Participants were divided into two groups: one using the actual GlassesOff program (the ACTIVE GROUP, composed of 30 people) and the other one using a fake program based on a non-personalized algorithm (CONTROL GROUP made of 10 people). The participants were all held under the assumption that they were using the fully-functional application.
Both groups together are largely superior to the usual number of participants in similar group studies held by the American FDA (Food and Drug Administration).

**Study results:**

- 90% of the ACTIVE GROUP participants reached the expected results, which are an increasing of the visual acuity by 100% after 35 training sessions.
- 71% of the ACTIVE GROUP participants manage to read a front that is a third smaller than in the beginning of the study.
- The ACTIVE GROUP participants have multiplied their reading pace by four.

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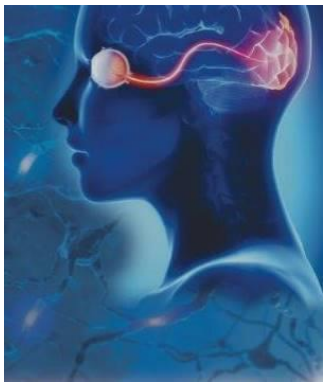
- In the CONTROL GROUP, the results are quasi null: only 1.1% of improvement in the near visual acuity, and no increase of the reading speed.

**>> Continue reading here for the whole scientific study.**

## Control placebo study to test the efficacy of the GlassesOff scientific engine and mobile application

Study conducted by Maria Lev, Oren Yehezkel and Uri Polat.
Tel Aviv University, Sackler Faculty of Medicine, Sheba Medical Center, Goldschleger Eye Research Institute, Israel: INNOVISION LABS. INC.

Published in July 2016 in Copenhagen during the Forum of Neurosciences, organized by FENS (Federation of European Neurosciences Societies).



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## Introduction

Presbyopia results from a gradual decrease in accommodative power during normal ageing, leading to reduced near visual acuity and contrast sensitivity and slower visual processing speed.
Presbyopia negatively affects the quality of vision for near tasks such as reading.
We showed that visual performance on a variety of tasks benefits from practice, in both young and older adults, resulting in long-term improvements.
These long-term effects of repeated practice on a demanding task are termed perceptual learning (1-6).
After training generalize to untrained stimulus parameters, such as reading speed, brain processing, reaction time and more.

## Aim Of The Study

A masked, placebo-controlled, 60-day trial in individuals aged 40+ with self-reported reduced near visual acuity (NVA) examined the clinical effects on NVA and visual cortex image processing speed (IPS) of training a minimum 35 sessions with the GlassesOff application on a mobile device (iOS or Android).

## Methods

Participants (n = 40) were randomly divided at a ratio of 1:3 to placebo comparator cohort (GlassesOff app, muted training algorithm, n = 10)
or active cohort (GlassesOff app, active training algorithm, n = 30). near visual acuity ( NVA) and visual cortex image processing speed (IPS) measurements were performed at baseline and after completion of the study.

| Baseline Characteristics of the Active vs Placebo Groups | | | |
|---|---|---|---|
| | Active (n=30) | Placebo (n=10) | |
| **Age** | 49.7±4.3 | 49.3±3.4 | p=0.77 |
| **Baseline NVA (logMAR)** | 0.39±0.15 | 0.38±0.16 | p=0.95 |
| **NVA@120 ms (logMAR)** | 0.49±0.18 | 0.47±0.17 | p=0.65 |
| **NVA@600 ms (logMAR)** | 0.55±0.19 | 0.49±0.20 | p=0.92 |
| **NVA@30 ms (logMAR)** | 0.64±0.19 | 0.57±0.22 | p=0.87 |

## GlassesOff Training Algorithm

Participants were trained using the same Glassesoff application on their personal mobile devices. The participants in both active and placebo group installed the exact same GlassesOff application and were held under the assumption that they are using the fully-functional application. The placebo group participants were marked as “muted training algorithm” on the GlassesOff server without their knowledge, while the active group
participants were marked as “active training algorithm”. The participants were asked to train with the application 2-3 times per week for a minimum of 35 sessions within a 60-day period, and complete each training session. The placebo group’s training session were the same amount of time and containing the same visual challenges as those in the active group. However, the placebo group training sessions did not use the active algorithm
that was designed to improve the participant’s NVS and IPS via gradual increase in the difficulty levels of the visual stimulations tasks.

## GlassesOff Active Training Algorithm

Participants were trained on contrast detection and discrimination of Gabor targets under spatial masking, temporal masking, and spatial crowding conditions, while spatial and temporal constraints were posed on the visual processing. The training covered a wide range of spatial frequencies and orientations that were modified in accordance with the improved performance. Participants were instructed to train in a dark room from a distance of 40 cm with both eyes open.


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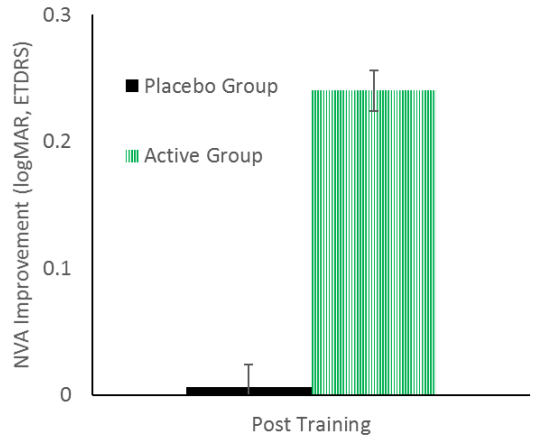
## Experiment and Results

Near visual acuity (NVA)




| Post-Study Characteristics of the Active vs Placebo Groups | | | |
|---|---|---|---|
| | Active (n=30) | Placebo (n=10) | |
| **NVA baseline (logMAR)** | 0.39±0.15 | 0.38±0.20 | p=0.95 |
| **NVA improvement vs baseline (logMAR)** | 0.234 ±0.091 | 0.006 ±0.055 | p=0.005 |
| **Number of training sessions** | 44.7 ±5.5 | 40.3±0.22 | p=0.15 |

The placebo cohort's NVA improvement was close to zero, (0.006 ±0.055 logMAR, or 1.1%), while the active cohort's NVA improved by 0.234 ±0.091 logMAR (71% improvement, meaning that on average they see letters with a font size which is 29% of the baseline font size, or approximately 1/3 of the size of the baseline font).
Post training 27 out of 30 (90%) participants from the active cohort reached the study primary objective of improvement of their initial NVA by at least 0.18 logMAR positive delta (2x better NVA). In contrast, no participant from the placebo cohort reached the secondary objective.

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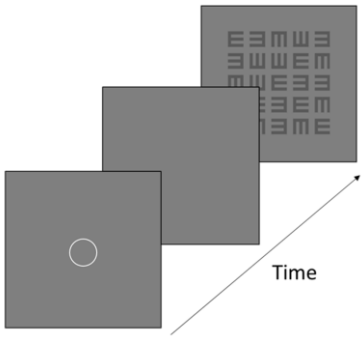
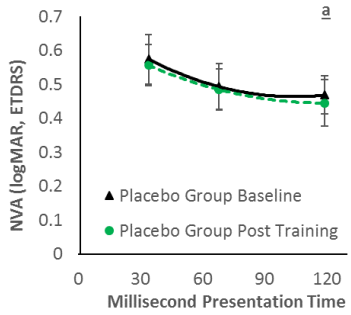
## Image processing speed

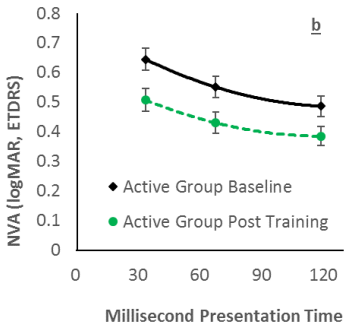



**Stimuli and paradigm**. The time-line of a single trial. A fixation circle (enlarged for presentation) appeared in the center of the screen before each trial, which disappeared when the participants initiated the trial by pressing anywhere on the touch screen, after which a blank screen appeared for 300 milliseconds, followed by the stimulus presentation.

## Placebo training




## Active training




The placebo cohort showed no significant difference in IPS (P>0.38, paired t-test) between baseline and post training. However, the active cohort showed significant improvement in all 3 presentation times (p<0.00005, paired t-test). Post training, the active cohort participants were able to see on average logMAR 0.5±0.02 letters after only a 30 millisecond presentation, while their baseline for logMAR 0.5±0.02 was 120 millisecond presentation, or four times (4x) faster IPS.

## Conclusions

GlassesOff application with an active training algorithm can be used to increase NVA to levels allowing reading of small fonts (newspaper font size) without the aid of reading glasses; and to significantly increase the visual cortex image processing speed (IPS) to see real-life visual events at significantly higher speeds.
The placebo group show no improvement in both near visual acuity (NVA) and image processing speed (IPS).

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**About InnoVision Labs Inc.:** http://www.innovision-labs.com

The neurotechnology company develops and sells software applications. Counting numerous first-rank Scientists and Digital Specialists, InnoVision Labs has created a technological platform that aims at boosting visual performance thanks to perceptive training. The product GlassesOff™ has been developed specifically to reduce or break the dependence on reading glasses by the people who start suffering from the effects of aging on their near vision after the age of forty. This innovative company has already raised 13M dollars since 2007.

**About the GlassesOff application:** http://www.glassesoff.com

The general quality of one's sight relies on two things: the quality of the images that the eye perceives, and the ability of the brain to analyze those images. GlassesOff focuses on the cerebral part of the vision, by stimulating the neurons of the visual cortex, in order to develop the brain's capacity to deal with the images. The result is a global progress in near vision function, and an increased facility of reading without glasses. The high efficiency of this method has been proven many times by different studies made in renown universities in the USA, Israel and Germany. Several leading magazines such as Nature, Scientific Reports, and Vision Research have dedicated publications to the application, and many vision professionals have referred to it in conferences organised by the ARVO*, the ECVP*, and the AAO*, amongst other organisations. (These are American and European scientific organisations on vision and ophtalmology, as will be detailed at the end of this publication). In France, the professional journals Cahiers Ophtalmologiques, Réflexions Ophtalmologiques and TV Ophtalmologie have addressed articles and interviews on this world-conquering app. Finally, it has also received many prestigious awards.

**To see scientific presentations, scientific publications and main awards please follow this link:** http://www.innovision-labs.com/research

**To get the media kit please follow this link:** http://www.glassesoff.com/media-kit-en.zip

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