

A User Guide



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- 2 Tunnel Vision Lens® (TVL), three B.A.C. versions available

Objectives By using with TVL® with Fatal Vision®, participants will experience the tunnel vision effect of alcohol impairment on peripheral vision and discuss the potential consequences of tunnel vision on driving and other tasks.

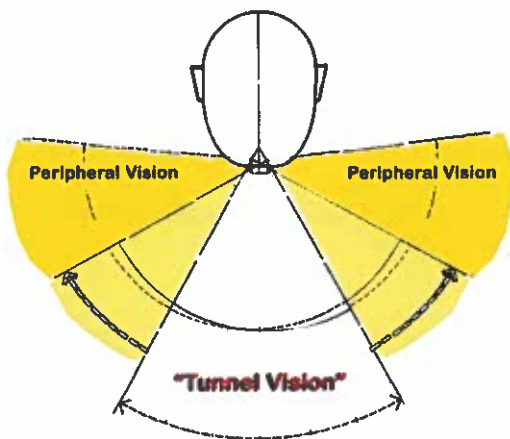
Preparation



- 1 Select the TVL® matching the impairment level of your Fatal Vision® Goggle. The TVL® color matches the Fatal Vision® label color, e.g., Red to Red, Silver to Silver.
- 2 Peel the TVL® lens from the card carrier and apply to the corresponding Fatal Vision® Goggle.
- 3 You may store your TVL® lenses on the card carrier or leave them applied on your Fatal Vision Goggle.

Warning! Fatal Vision is intended to impair a person's vision and balance. Use spotters for participants wearing Fatal Vision® Goggles, keep demonstration area clear of all obstacles, Safety First!

Introduction



Alcohol impacts a person's abilities in many ways. TVL® demonstrates one of those impacts. People who have consumed relatively moderate amounts of alcohol may experience reduced peripheral vision and as a result are less likely to perceive images outside of a narrowed visual field. This narrowed visual field is also referred to as tunnel vision or myopia. A person who is effected by tunnel vision or myopia may focus on images directly in front of them while images perceived in a normal person's peripheral field of view are blurred or not recognized. The impact on driving is that another car, person or animal approaching from an impaired driver's peripheral field of view are missed at potentially great consequence.

TVL® Activities

Fatal Vision® and TVL® are most effective when participants experience the goggles versus being a passive observer.

1 Demonstrate Peripheral Vision and Tunnel Vision

- 1 Have the participant look straight ahead and put both hands out to the side.
- 2 Have them move their hands forward, stopping when they can see their own hands out of their peripheral vision. Have them note the place where their hands stopped.
- 3 Now have your participant perform the same activity using Fatal Vision® Goggles with TVL® where their hands stop.
- 4 There should be a considerable difference in the participant's perception of their hands with and without Fatal Vision®. Alcohol can cause similar effects in loss of peripheral vision.



2 Reacting with Tunnel Vision



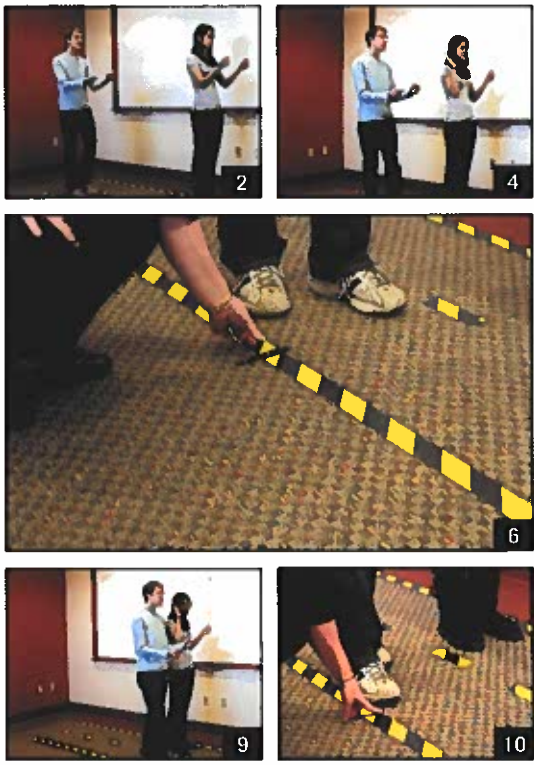
- 1 Give the participant the following instructions:
 - a Tell them that you will be sweeping your finger across their line of vision and that they must look straight ahead not moving their head or eyes.
 - b Ask them to raise their hand when they can see your finger.
- 2 Have student put on a pair of the Fatal Vision® Goggles with TVL®.
- 3 Repeat step 1, both a and b.

Discussion

- ▶ Point out how their field of vision has narrowed.
- ▶ What would happen if they were driving with a limited field of view?
- ▶ What impacts on their ability to drive safely might this have?



3 Changing Lanes



- 1 Lay out two lanes of Walk-the-Line tape, each about 10' long.
- 2 Position one participant at the top of the right hand lane, this is Driver 1.
- 3 Position the participant without TVL® at the bottom of the left hand lane, this is Driver 2.
- 4 Instruct Driver 1 to call out when they see Driver 2.
- 5 Have Driver 2 begin walking up their lane.
- 6 Mark the spot where Driver 2 was sighted.
- 7 Driver 2 returns to the bottom of their lane.
- 8 Have Driver 1 put on the Fatal Vision® Goggles with TVL®.
- 9 Have Driver 2 begin walking up their lane.
- 10 Mark the spot where Driver 2 was sighted this time.

Describe various driving situations where loss of peripheral vision may have serious consequences and why.

Supporting Facts



- 1 Persons under the influence of alcohol as low as .05 B.A.C. will experience a reduction in their peripheral vision field. At a B.A.C. of .05 and higher, vision starts to blur and an individual's reasoning, judgment and concentration abilities begin to decrease.
- 2 Horizontal gaze nystagmus (HGN) refers to a lateral or horizontal jerking when the eye gazes to the side. In the impaired driving context, alcohol consumption hinders the ability of the brain to correctly control eye muscles, therefore causing the jerk or bounce associated with HGN. As the degree of impairment becomes greater than .05 B.A.C., the jerking or bouncing, i.e. the nystagmus, becomes more pronounced. This is assessed in the horizontal gaze nystagmus test. These eye movements due to impairment are involuntary motions, meaning the person exhibiting the nystagmus cannot control it. Beginning at a B.A.C. of .05 research has shown that an individual's eyes begin to quiver at 45 degrees (90 degrees consisting of looking straight ahead.).
- 3 Because of this involuntary motion of the eyes due to alcohol impairment, studies have shown that experienced law enforcement officers were correct 96 percent of the time in determining a .10 B.A.C. or more using the HGN test. When an officer sweeps their finger 12-15" from the eyes of a person across their field of vision, the eye begins to quiver at the angles described below and generally corresponds to these B.A.C. levels.*

| B.A.C. Peripheral Vision | |
|--------------------------|-----|
| 0.05 | 45° |
| 0.10 | 40° |
| 0.15 | 35° |
| 0.20 | 30° |

*Sources:
Forensic aspects of vision and highway safety, Merrill J. Allen, Bernard S. Abrams, Arthur P Ginsburg, 2000
Nystagmus testing in intoxicated individuals, Karl Citek, Bret Ball, Dale Rutledge, 2003
Horizontal Gaze Nystagmus, Science & Law: A Resource Guide for Judges, Prosecutors and Law Enforcement, NHTSA <http://www.nhtsa.gov/people/injury/enforce/nystagmus/hgnm.html#three>
The Robustness of the Horizontal Gaze Nystagmus Test, Marcelline Burns, NHTSA 2007

Extra TVL® Activities

Perform all activities two to three times: without Fatal Vision® Goggles, without TVL®, and with TVL®.

5 Playing Catch



- 1 Layout a "Walk-the-Line" demonstration.
- 2 Position 2-3 people with soft balls at 2-3 points on the layout. These people should be about 4'-5' from the line.
- 3 Instruct them to take turns throwing their ball to the participant. Instruct the participant to:
 - a Stand at the beginning of the line.
 - b Keep looking straight ahead to the end of the line.
 - c Walk straight to the end of the line.
 - d Catch the balls.
- 4 Repeat steps 1-3, this time with the participant wearing a pair of Fatal Vision® Goggles with TVL®.

Discussion

- ▶ How did you feel the first time you saw a ball coming at you?
- ▶ Ask the spectators to describe what they saw. How would this translate into driving a car?
- ▶ Did the participant recognize the balls in time to catch the ball? Did it impact their ability to keep walking?

6 Driving SIDNE®



- 1 Lay out a SIDNE® demonstration course.
- 2 Instruct the Transmitter Monitor to ONLY operate SIDNE® in NORMAL (unimpaired) mode for this exercise.
- 3 Position 2-3 people with beach balls at 2-3 points in the course. Instruct them to take turns rolling their ball toward SIDNE®.
- 4 Inform both the passenger and the driver that every beach ball is a traffic hazard, a child, an animal, another vehicle, or bicycle rider.
- 5 Place goggles on the passenger (not the driver).
- 6 Instruct the driver to:
 - ▶ Follow the arrows around the course.
 - ▶ Take evasive action only when the passenger informs them of a hazard.
 - ▶ Be aware of obstacles in their path.
 - ▶ Avoid hazards.
- 7 Instruct the passenger to:
 - ▶ Look straight ahead at all times.
 - ▶ Inform the driver as soon as they see a hazard.

Discussion

- ▶ What was the time difference between when the driver saw the ball coming toward SIDNE® and when the passenger saw it?
- ▶ Was the driver able to react as quickly as you thought necessary?
- ▶ Ask the spectators to describe what they saw and how the danger translates to them if they were the hazard or the passenger.