

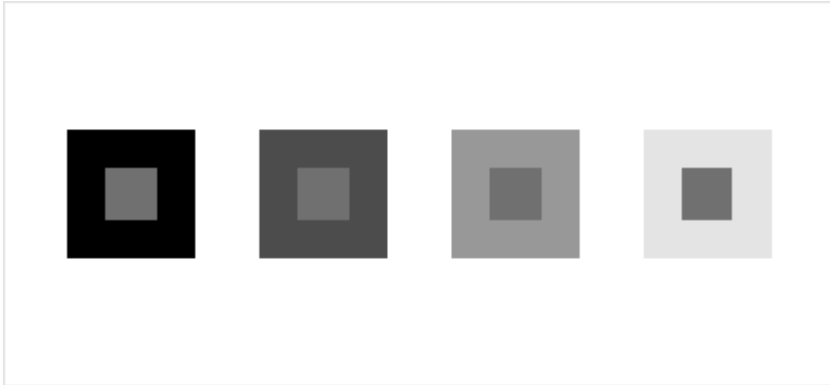
Seeing is believing

If we wish to understand how vision works, we have to look at not only the explanations provided by physics, but also at cognitive science. On a totally scientific basis this science now substantiates the millennium-old scepticism of philosophers as to whether an objective reality is at all accessible to human beings. Is what we see reality, or is it "only" a fabrication of our brains? Today, it has been proven that the latter is the case. For our vision, this means: we cannot see a real world objectively.

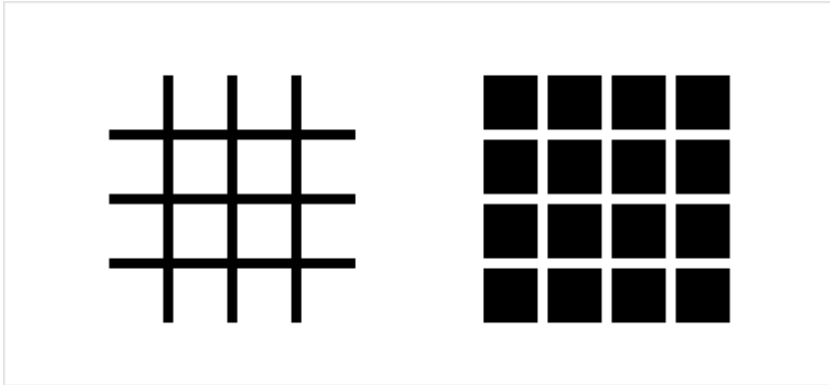
Some key discoveries made by cognitive science make this clearer: the information transmitted by the sense receptors of the eyes to the brain is devoid of meaning. Only in the brain is any meaning or significance assigned to these signals on the basis of experience. What human beings see is therefore their own construct of reality. In the words of cyberneticist Heinz von Foerster: "The environment we perceive is our invention."

Do you really see it?

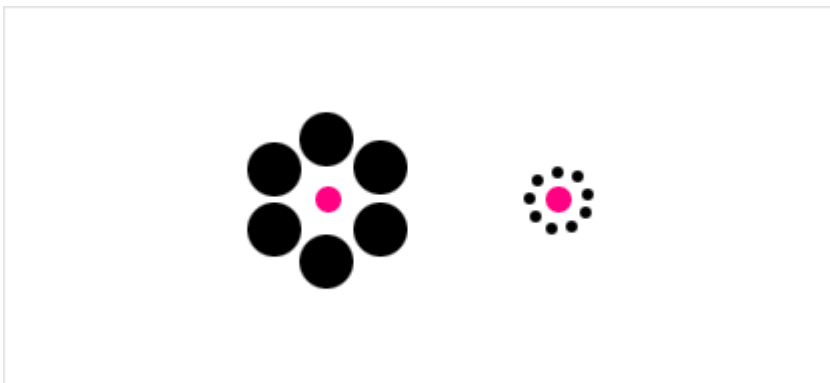
Here we see a few examples showing how our brain constructs its own reality.



The small square has the same color in all of the larger squares. Nevertheless, the small square seems to get darker and darker from left to right due to its contrast with the large squares.



The optical illusion with the Hermann's grid. Our brain makes us see grey dots in the corners of the white lines, but they do not really exist. This also happens when you see the grid in contrasting colors.



The pink circle surrounded by large, black dots seems to be smaller than the pink circle between the small black dots. In reality, however, the two pink circles are exactly the same size.

Exercises for sports fans



This will allow you to considerably improve your reflexes, reaction time, speed of perception and the coordination between your eyes and your body.

Visual safety will boost your self-confidence. You will be prepared to take more risks and improve your sporting performance.

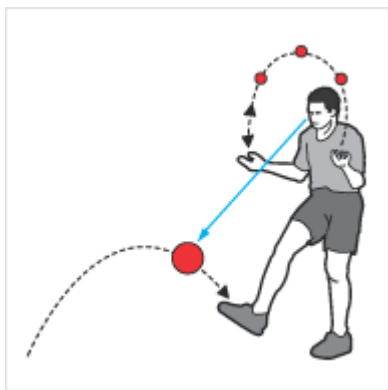
The visual training allows you to train 6 different visual skills:

- The motor function of the eyes is important to follow moving objects (e.g. a ball or team mates) flexibly and effortlessly.
- Eye-body coordination is important for optimum body control and exact timing.
- Dynamic visual performance helps you to recognize details of the sporting apparatus and your components while remaining in action yourself.
- Your depth perception must be as good as possible to enable you to estimate distances and the speed of moving objects and people quickly and correctly.
- Peripheral vision is important to enable you to see your entire surroundings, the position and movement of team mates and opponents and to adapt your own actions accordingly.
- Visualization is the art of imagining an action in your mind.

These 6 exercises sharpen your vision

We explain each visual skill by using an example from the field of sport. Take about 4 minutes for each exercise. Train every day if you can: this will train your nervous system on an ongoing basis.

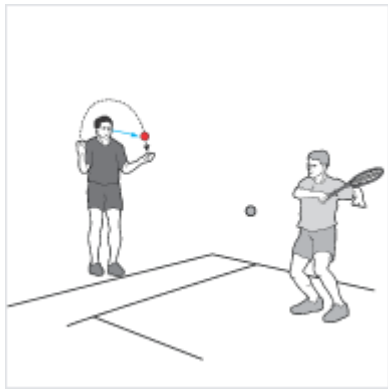
How footballers can improve their eye-body coordination



Stand up and start juggling with 3 balls (2 for beginners). A team mate passes the ball to your foot. Follow the flight of the ball carefully, then receive it and hold it up with your foot while continuing to juggle. Even more difficult: various sorts of balls (volley, medicine, tennis ball, etc.) are passed to you and you have to control them. Alternatively, you pass the ball and your training partner receives it.

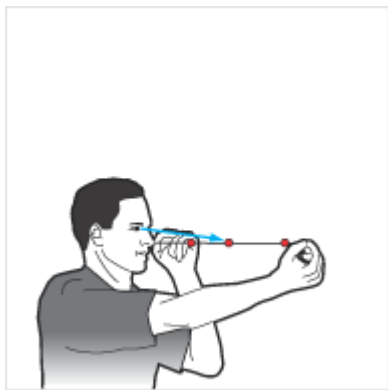
Important for almost any sport, particularly tennis, basketball, archery, bowling.

How tennis players can train the motor function of their eyes



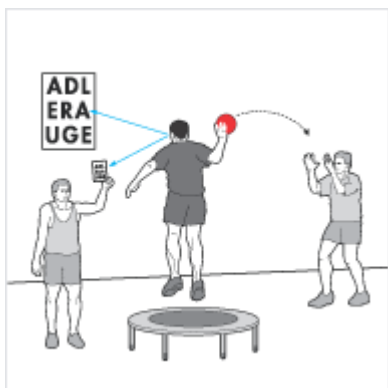
For flowing eye movements. Throw a tennis ball in a high loop from one hand to the other. Fixate it with your eyes; follow it as it revolves in the air. Scan the felt coating of the ball. Draw a letter on the ball and try to keep your eyes on it. Make the whole thing even more difficult by doing it at the edge of the court and try at the same time not to lose sight of the ball in play. If possible, do not move your head in the process.
 Required for all ball/net sports like table tennis, badminton, squash, volley ball.

How golfers can enhance their depth perception



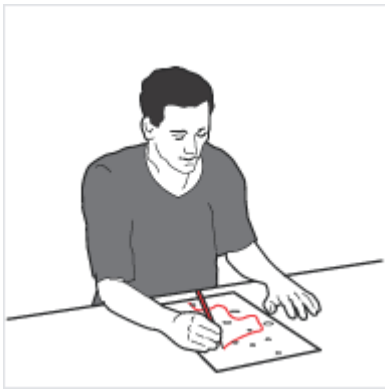
Hold the end of a string with three wooden beads at the tip of your nose with your left hand and pull the string into the horizontal with your right hand. Distances from your nose: 1st bead 15 cm, 2nd bead 45 cm, 3rd bead 75 cm. Fixate one bead with each of your eyes; you will then see two other beads double. Goal: The string, which you will also see double, should intersect the fixated bead like a cross. Any deviations from this indicate that a positional error is present in the eye. Once this has been completed, move on to the next bead.
 Also important for such sports as skiing, snowboarding, mountain biking, motor sports, dancing and billiards.

How handball players can train the dynamics of their vision



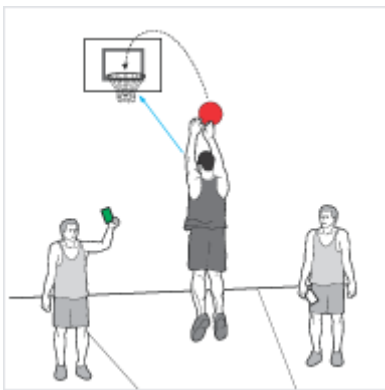
Position yourself on a trampoline with a handball. A chart with letters is hung up about 3 m away. A training partner directly beside you holds up a card showing the same letters. Jump up and down, passing the ball to another player who then throws the ball back to you, and read a letter alternately from the chart and then from the card loudly and clearly.
 Required for all fast sports such as **mountain biking**, **tennis**, motor sports, ice hockey.

How climbers can improve their visualization skills



Draw the support points of a climbing route on a sheet of paper. Then visualize the route you want to climb in your mind's eye. Close your eyes and draw the route without looking. Open your eyes and compare the results. Alternative to train your estimation of the range covered: position yourself in front of a climbing wall, focus on a support point, close your eyes, touch the wall, estimate the distance to the wall, open your eyes and compare. Also suitable for alpine skiing, mountain biking, swimming, athletics, bob, show jumping.

How basketball players can optimize their peripheral vision



Make a lay-up shot from the free throw line. To your right and left there are two other players with concealed colored cards. They each briefly lift up a card. Your eyes remain focused on the net; from the corners of your eyes, you must say the color of the card out loud. This is more difficult with playing cards, and even more difficult if the other players are standing at the edge of your field of view or hold up the colored cards for an extremely short time only. Essential for every team sport and for tennis, table tennis, boxing, badminton, squash.