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Sommario/riassunto	<p>Perceptual learning can be defined as a long lasting improvement in a perceptual skill following a systematic training, due to changes in brain plasticity at the level of sensory or perceptual areas. Its efficacy has been reported for a number of visual tasks, such as detection or discrimination of visual gratings (De Valois, 1977; Fiorentini & Berardi, 1980, 1981; Mayer, 1983), motion direction discrimination (Ball & Sekuler, 1982, 1987; Ball, Sekuler, & Machamer, 1983), orientation judgments (Fahle, 1997; Shiu & Pashler, 1992; Vogels & Orban, 1985), hyperacuity (Beard, Levi, & Reich, 1995; Bennett & Westheimer, 1991; Fahle, 1997; Fahle & Edelman, 1993; Kumar & Glaser, 1993; McKee & Westheimer, 1978; Saarinen & Levi, 1995), visual search tasks (Ahissar & Hochstein, 1996; Casco, Campana, & Gidiuli, 2001; Campana & Casco, 2003; Ellison & Walsh, 1998; Sireteanu & Rettenbach, 1995) or texture discrimination (Casco et al., 2004; Karni & Sagi, 1991, 1993). Perceptual learning is long-lasting and specific for basic stimulus features (orientation, retinal position, eye of presentation) suggesting a long-term modification at early stages of visual analysis, such as in the striate (Karni & Sagi, 1991; 1993; Saarinen & Levi, 1995; Pourtois et al., 2008) and extrastriate (Ahissar & Hochstein, 1996) visual cortex. Not confined to a basic research paradigm, perceptual learning has recently found application outside the laboratory environment, being used for clinical treatment of a series of visually impairing conditions such as amblyopia (Levi & Polat, 1996; Levi, 2005; Levi & Li, 2009; Polat et al.,</p>

2004; Zhou et al., 2006), myopia (Tan & Fong, 2008) or presbyopia (Polat, 2009). Different authors adopted different paradigms and stimuli in order to improve malfunctioning visual abilities, such as Vernier Acuity (Levi, Polat & Hu, 1997), Gratings detection (Zhou et al., 2006), oculomotor training (Rosengarth et al., 2013) and lateral interactions (Polat et al., 2004). The common result of these studies is that a specific training produces not only improvements in trained functions, but also in other, untrained and higher-level visual functions, such as visual acuity, contrast sensitivity and reading speed (Levi et al, 1997a, 1997b; Polat et al., 2004; Polat, 2009; Tan & Fong, 2008). More recently (Maniglia et al. 2011), perceptual learning with the lateral interactions paradigm has been successfully used for improving peripheral vision in normal people (by improving contrast sensitivity and reducing crowding, the interference in target discrimination due to the presence of close elements), offering fascinating new perspectives in the rehabilitation of people who suffer of central vision loss, such as maculopathy patients, partially overcoming the structural differences between fovea and periphery that limit the vision outside the fovea. One of the strongest point, and a distinguishing feature of perceptual learning, is that it does not just improve the subject's performance, but produces changes in brain's connectivity and efficiency, resulting in long-lasting, enduring neural changes. By tailoring the paradigms on each subject's needs, perceptual learning could become the treatment of choice for the rehabilitation of visual functions, emerging as a simple procedure that doesn't need expensive equipment.
