Abstract

The thesis deals with the evaluation and training of cognitive-visual functions of elite athletes using the NeuroTracker computer program. The theoretical part pursues collecting of recent studies and literature, concerning predominantly visual perception and its connection with cognitive abilities and movement. It focuses mainly on sportsmen and evaluation of their visual functions. Furthemore it introduces the concept of neurovisual training and its possible application in other clinical fields.

Methodology: The NeuroTracker program evaluates reaction abilities, visual memory, spatial imagination and other components of cognitive and visual functions. The output of this evaluation is a numerical value before and after training and calculated percentage improvement. This change was measured in a group of 64 athletes of various sports. The thesis also includes case reports of two athletes who underwent a general optometric examination, which was complemented by further visual training.

Results: We have showed statistically that after a series of trainings on the NeuroTracker, there is an overall improvement of the measured parameters. Moreover we have shown that the number of performed trainings moderately correlates with the resulting improvement. Each sport correlates in a different way however. The last statistically important discovery was the finding that the kind of sport should not have a significant influence on the overall results. We have further evaluated the subjective feelings of five athletes using a semi-structured interview.They have all confirmed that their performance subjectively improved.

Conclusion: We have presented in our thesis the methodological procedure of the NeuroTracker program applied to athletes. We have confirmed the improvement of measured parameters, that correlates with the subjective improvement in sport. It is clear from the available studies, that this program could be used for various clinical diagnoses, such as brain trauma or ADHD (Attention Deficit Hyperreativity Disorder).

Keywords

Sports vision, neuro-visual training, neuro-visual rehabilitation, NeuroTracker, sport