MOTOR CONTROL BY VISUAL PERCEPTION IN DIVING?

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INTRODUCTION: To perform the movement from tucked to straight position of the body for the entry into the water in springboard and platform diving different sensory inputs can be used. Visual control, based on visual perception, is one concept of getting information about the divers own movement. Special exercises and training programs (de Mers, 1983) were designed to get a better performance. Own investigations (Naundorf, Krug & Lattke, 2002) reported positive effect of using a somersault simulator in visual perception training. But in this study we look only at visual perception, but not on motor control. Another study of our group (Naundorf, Krug & Lattke, 2004) focused on using the somersault simulator for improving the technique of preparation for the water entry. Based on this we look for combination of improving visual perception and technique.

METHOD: Ten divers (age: M 14.4 SD 1.71) performed two and a half somersault backward tucked body position (diving terminology: 205c) and eight divers (age: M 9.37 SD 0.25) trained on the one and a half somersault backward tucked (203c). In every training session, each consisting of eight trials, divers had to look for a diode lamp (randomised switched on or off) and showed a good technique of water entry position. As explained in our cited studies the somersault simulator was used. We analysed the correct identification of the diode lamp and compared the technique of water entry preparation with a reference movement. The absolute error (AE) between reference movement and the divers' movement was calculated. Based on the identification of the diode lamp (correct identification = good visual perception and wrong identification = poor visual perception) two groups of trials were separated. For visual perception based movement control we hypothesized a smaller absolute error for dives with correct identification of the diode lamp and bigger absolute error for dives with wrong detection of the lamp. To compare data the Wilcoxon Sign-Rank Test was utilized.

RESULTS: For both dives there was no difference in movement accuracy between dives with correct and wrong lamp identification (203C: Z=-1,521 p=.064; 205C: Z=-0,178 p=.430).

DISCUSSION: Learning visual perception is possible (Naundorf, Krug & Lattke, 2002) but we can not assume divers use it for movement control. Training visual perception could be a second task for the divers, but there is no combination of vision and motor control.

CONCLUSION: In our study using the somersault simulator good visual perception shows no effect on performance of movement accuracy. Using visual perception for motor control in diving new training programs with better integration of the two aspects should be arranged. Also other sensory inputs and its integration should be a focus of future research.

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