

RELATION BETWEEN THE REACTION TIME AND THE AMPLITUDE CHANGES OF THE H-REFLEX IN CASE OF SUCCESSIVE PLANTAR FLEXION OF THE FEET PERFORMED UNDER DIFFERENT EXPERIMENTAL CONDITIONS

Tz. Tzekov, R. Radev, S. Tzekov

Department of Pathophysiology, Varna

The progress of the brain sciences is obvious and undeniable (1,4,9). The discovering of the functional specialization of the brain hemispheres had a revolutionary influence on the concert of its functions. In the light of these investigations we set ourselves the task of ascertaining the type of the relation between the reaction time and the amplitude changes of the H-reflex during the preparation for a successive voluntary plantar flexions of the heels of the feet. An important condition in our research was that in the first series the movement started with one of the feet, and in the second - with the other one, or, in the first series the left hemisphere is connected with the beginning of the movement and in the second series - with its second part. Two experimental series on young volunteers have been carried out. The subjects had to raise their heels in succession one after other, starting with the right and with the left one, in the first and in the second series, respectively. A broad description of the methods used for reaction time and H-reflex registration, one day's program and statistical data processing are to be found elsewhere (8). The data obtained from the two experiments are shown on fig. 1 and fig. 2.

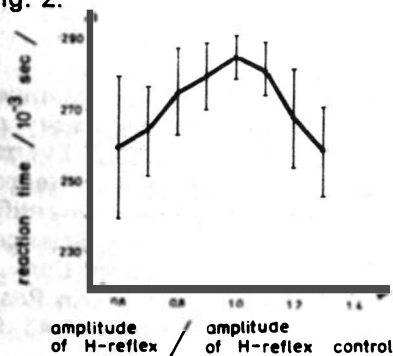


Fig. 1

Fig.1. Mean reaction time values as a function of the amplitude changes of the H-reflex (H-reflex amplitude compared to the control H-reflex one). Bars at every point indicate confidence limits calculated at $p=0,05$. The movement starts with the right heel. Reaction time is registered with the raising of the right heel and the H-reflex is evoked from the lateral belly of the left gastrocnemius muscle

From the results it is clear that the curves of the relation between the reaction time and the amplitude changes of the H-reflex has a different course in the two series.

In the supraspinal parts of the central nervous system in animals, an activation of the neurones 50 to 150 msec before the initiation of a movement has been found out (2,3,5-7). At that, no difference between the two hemispheres of the brain concerning the organization of the movement has been mentioned in that literature.

In the results we obtained we touch on this question, and we dare suppose that there exists a different tactics for preparation of a forthcoming voluntary movement depending on which of the brain hemispheres is connected with its first or second part.

Fig.2. Mean reaction time values as a function of the amplitude changes of the H-reflex (H-reflex amplitude compared to the control H-reflex one). Bars at every point indicate confidence limits calculated at $p=0,05$. The movement starts with the left heel. Reaction time is registered with the raising of the left heel and the H-reflex is evoked from the lateral belly of the right gastrocnemius muscle

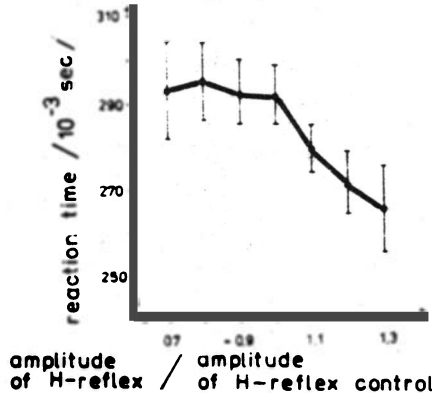


Fig. 2

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