

Biological feedback. Game presentation.

Appendix to 'INTENS trainer. User manual'

To make the **training** process more effective the patient can pass the course in a game mode.

Check/uncheck the flag in the **Interface** menu to enable/disable the game mode (see Fig. A. 1).

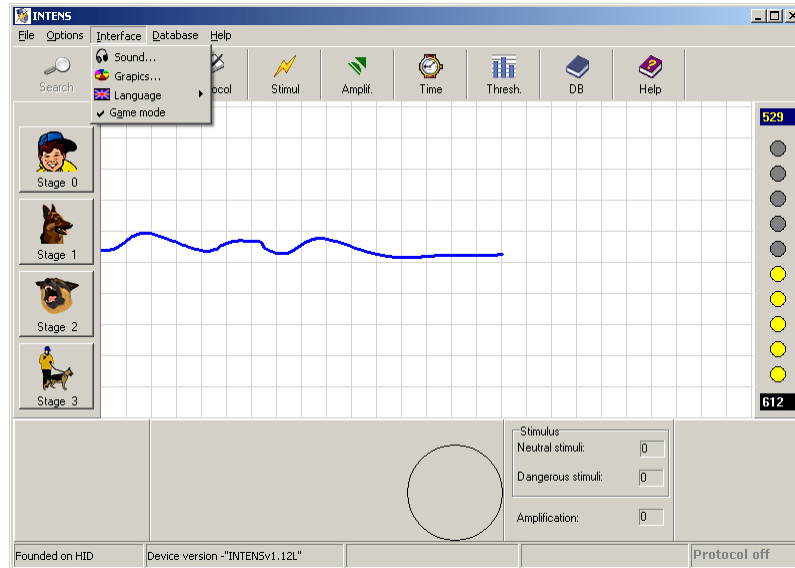


Fig. A. 1

If **Game mode** flag is checked, after the calibration is finished an additional window will appear (Fig. A. 2), where the training process will be displayed.

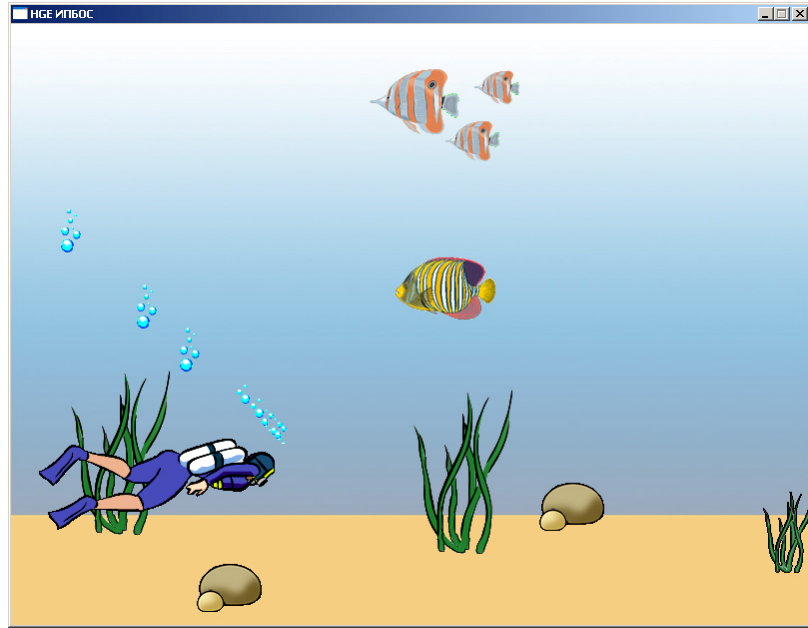


Fig. A. 2

The **training** is controlled in the main **program** window (see User manual).

In the additional window the process of the **training** is shown as a computer game, its idea is presented below.

The *Diver* (Fig. A. 2) swims under the water, his breath causes recurrent appearance of the *bubbles* (the number of the *bubbles* corresponds to **GSR** level). *Fish* and *electric rays* pass by attracted by the great number of *bubbles*. The more a **patient** is afraid (the higher **GSR** is), the more *bubbles* the *diver* 'blows' and the nearer the *fishes* and *electric rays* swim up to him. If the *diver* gets in the *fish* and *electric ray's field of view*, they swim up to him regardless of the number of the *bubbles*.

A big *fish* (Fig. A. 3) is a **neutral stimulus**.



Fig. A. 3

Initially it swims horizontally, but if the *diver* 'blows' a lot of *bubbles* (the **patient** reacts to the **stimulus**), it attracts the *fish's* attention and it

moves down. It is not dangerous if the fish approaches the *diver*. If there are few *bubbles*, the *fish* slowly rises back to initial depths.

The *electric ray* (Fig. A. 4) is a **dangerous stimulus** and behaves in different way depending on the **stage**.



Fig. A. 4

At the **stage 1** the *electric ray* behaves like a *fish*. At the **stages 2** and **3** the *electric ray* is dangerous for the *diver*, that is displayed *aureola* that appears from time to time (Fig. A. 5) and visible *field of view* of the *electric ray* (Fig. A. 6).



Fig. A. 5

The *electric ray's field of view* is displayed as a black dotted grid (Fig. A. 6). If the *diver* gets in the *electric ray's field of view*, the *electric ray* swims up to him and strikes (the **electric impact** is sent simultaneously).

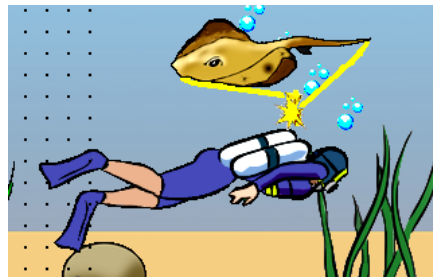




Fig. A. 6

The game purpose is to help the *diver* to reach a *treasure* (A. 7) avoiding the collisions with the *electric rays* (to perform the **stage 3** successfully).



Fig. A. 7

To find a treasure a patient should:

- find a bottle with a note  that will appear if the **stage 1** is performed successfully,
- to find a key to a chest  that will appear if the **stage 2** is performed successfully.

The *field of view of fish* and *electric ray* is determined by the **threshold** of the current **stage**, their speed is determined by the **measuring time** of a **response** to the **stimulus**.



In game mode at the **stage 2** the **electric impact** is sent later than in the usual **training** – at the moment when the *electric ray* strikes the *diver*.

When the **probes** are taken off, Put on probes! message appears and the *diver* stops swimming until the **probes** are put on again.



If the battery is low, you will see Replace battery message in the upper-left corner of the main program window (6.2).



Note. The game mode makes the **training more effective** for most of **patients**. It is better to combine game mode and electric stimulation as without the stimulation the training may be not so effective. However, for electro-sensitive **patients** and children the **training** can be performed without the **electric impact**: the **calibration** can be set by breath and the shock of the *electric ray* to the *diver* acts as discomfort **electric impact**. When performing the **training** in such a mode the **electrode** shall be taken off.