
经颅电刺激技术

摘要

因为人体里神经最发达的器官是大脑，一般过多利用大脑会产生神经疲劳。因此提倡劳逸结合，做事才会有效率，过度利用大脑，只会让他很难聚精会神，精神萎靡，会产生事半功倍或昏迷，死亡等后果。近些年人们患病数量逐渐变多，不只患者自己会产生很大的痛苦，也会为他的家人，或是社会产生很重的负担。但是目前治疗方法的成效不是很好，经颅电刺激具备很多优点，比如，很容易完成，具备很高的性价比，无创，安全可靠等，在医治疲劳方面的效果逐渐被证实，受到广大群众的关注。

对于临床探究的要求与国内经颅电刺激仪市场缺乏这个状况，研制了一个根据 FPGA 经颅电刺激仪，他是根据 FPGA 芯片 EP2C35F672C6 当做管控中心，融合 VHDL 程序，FPGA 随时根据外界对刺激参考数量的制定请求，启动相应的板块形成可以调节的强度，可以调节的频率或时间，可以调节的脉宽，刺激波形可以选择的信息式刺激信号，利用 D/A 切换电路完成信息讯号，向模拟讯息的转变，之后恒流解决模拟信息，最终得出的刺激电流，利用表面电极使用在病患的靶区域。

关键词：经颅电刺激；FPGA；阿兹海默症

ABSTRACT

Because the brain is the most developed organ in the human body, nerve fatigue is usually caused by excessive brain use. So pay attention to the combination of labor and labor to have efficiency, blindly use the brain, can only make the brain worse and worse, more and more difficult to concentrate, resulting in half the effort or even sick, coma, death and so on. The increasing number of patients in recent years has not only brought great suffering to the patients themselves, but also to the families of patients, still bring a heavy burden to society. However, the effectiveness of existing treatment options is not very satisfactory. Transcranial direct current stimulation is non-invasive, easy to implement, cost-effective, safe and convenient.

According to the need of clinical research and the market blank of domestic transcranial direct current stimulator, a transcranial direct current stimulator based on FPGA was developed. The stimulator takes the FPGA chip EP2C35F672C6 as the control core, combines the VHDL programming, FPGA the real-time response to the external request for setting the stimulus parameters, drives the corresponding module to produce the digital stimulus signal with adjustable intensity, adjustable frequency or period, adjustable pulse width and optional stimulus waveform. li, the final output stimulation current acts on the patient's target area through the surface electrode.

Key words: transcranial direct current stimulation; FPGA; alzheimer's disease

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