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Letter

# Neuroprosthetics 2.0

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It was a true delight to read the intriguing Editorial "Human-robotic interfaces to shape the future of prosthetics" in one of the recent EBioMedicine issues, which is more than timely [1]. While this editorial primarily addresses the assistive use of neuroprosthetics, there is another aspect to this technology that is now emerging as a "hot topic" in the field: application of neuroprosthetics to purposefully induce neuroplasticity that triggers neural recovery [2,3]. Here, it is even truer that success of this application depends on considering the real-life wishes of patients, as the desired (use-dependent) neuroplasticity critically depends on adoption of the technology into the user's day-to-day activities. Moreover, interests of those using this technology (such as data security, safety, accountability) have to be protected and related neuroethical issues discussed [4].

As outlined in the editorial, current neuroprosthetic technologies develop rapidly, but some of them are invasive or discomforting for the user. Therefore, future prosthetic devices should be as intelligent but also as simple as possible. For this, new concepts for controlling the prosthetics are essentially needed, e.g. by inclusion of augmented reality (AR) into current intention detection methods (e.g., electromyography, electrooculography, or electroencephalography) as an add-on to the concept [5]. Even more, stand-alone (non-contact) concepts of AR glasses controlling the prosthesis may help to simplify usability of modern prosthetics. The invitation of EBioMedicine to submit biomedical and bioengineering research on smart neuroprosthetics is thus more than welcomed!

## Authors' contributions

All authors contributed equally to the manuscript.

## Declaration of Competing Interest

Authors declare no conflicts of interest to be reported.

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