NEUROSCIENCE OF MOVEMENT

TwinBrain Summer School 2.0, Piran, Slovenia 4-9 July 2022

In our daily lives, we do many things automatically. And although we often seem to respond without the slightest mental effort, there are a multitude of complex processes going on in our brains. We only realize how difficult a task is when we (re)learn a certain cognitive-motor task, such as keeping our balance on skis or while surfing, or even when grasping a spoon after a stroke. On the other hand, we know of several progressive neurodegenerative diseases that prevent the smooth performance of everyday tasks. James Parkinson recognized that progressive Parkinson's disease (PD) is associated with debilitating features including postural instability and gait difficulties (PIGD), such as falls and freezing of gait. PD initially causes physical symptoms but later, problems with cognitive function, including forgetfulness and difficulty concentrating, may occur. As the disease worsens over time, many people develop dementia.

Studying the dynamics of the brain during the most routine movements, such as walking, balancing or learning new motor-cognitive tasks, remains a major challenge for neuroscience. For the TwinBrain Summer School 2.0, we have invited an international team of experts to report on the latest discoveries in the field of neuroscience on movement topics and to provide insight into how brain imaging technology can contri-

bute to the understanding of brain function and disease development. Recent advances in wireless and portable technologies allow us to take experimentation a step further into real life or situations that reflect everyday experiences. Therefore, the latest developments in Mobile Brain/Body Imaging (MoBI) were presented by internationally recognized experts from Slovenia, Germany, Switzerland, Italy, Belgium, the Czech Republic, Croatia, Bosnia and Herzegovina and the USA. The TwinBrain Summer School 2.0 was held on July 4-9, 2022, in Piran, Slovenia. The next Summer School 3.0 is scheduled for June 19-24, 2023, again in Piran, Slovenia.

Uroš Marušič

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NEVROZNANOST GIBANJA

Poletna šola TwinBrain 2.0, Piran, Slovenija, 4. –9. julij 2022

V vsakdanjem življenju veliko stvari počnemo samodejno. In čeprav se pogosto zdi, da se odzovemo brez najmanjšega miselnega napora, v naših možganih potekajo številni kompleksni procesi. Kako težka je ta naloga, se zavemo šele, ko se (ponovno) naučimo določene kognitivno-motorične naloge, kot je ohranjanje ravnotežja na smučeh ali med deskanjem ali celo prijemanje žlice po možganski kapi. Hkrati poznamo več nevrodegenerativnih bolezni, ki napredujejo in onemogočajo nemoteno opravljanje vsakodnevnih opravil. Že James Parkinson je poročal, da je progresivna Parkinsonova bolezen (PD) povezana z izčrpavajočimi značilnostmi, kot so posturalna nestabilnost in težave pri hoji (PIGD) ter tudi padci in zamrznitev hoje. PD na začetku povzroči telesne simptome. Pozneje se lahko pojavijo tudi težave s kognitivnimi funkcijami, vključno s pozabljivostjo in nezmožnostjo koncentracije. Ko se bolezen sčasoma poslabša, veliko ljudi razvije demenco.

Proučevanje dinamike možganov med večino rutinskih gibov, kot so hoja, ravnotežje ali učenje novih motorično-kognitivnih nalog, ostaja velik izziv za nevroznanost. Na poletno šolo TwinBrain 2.0 smo povabili mednarodno ekipo strokovnjakov, da bi

poročali o najnovejših odkritjih na področju nevroznanosti gibanja in zagotovili vpogled v to, kako lahko tehnologija slikanja možganov prispeva k razumevanju delovanja teh in razvoja bolezni. Novejši napredek na področju brezžičnih in prenosljivih tehnologij nam omogoča, da gremo korak naprej pri eksperimentiranju in sicer v resnično življenje oz. okoliščine, ki odsevajo vsakodnevne izkušnje. Zato so najnovejše dosežke na področju Mobile Brain/Body Imaging (MoBI) predstavili mednarodno priznani strokovnjaki iz Slovenije, Nemčije, Švice, Italije, Belgije, Češke, Hrvaške, Bosne in Hercegovine in ZDA. Poletna šola TwinBrain 2.0 je potekala od 4. do 9. julija 2022 v Piranu. Naslednja Poletna šola 3.0 bo predvidoma organizirana od 19. do 24. junija 2023, ponovno v Piranu.

Uroš Marušič