

SAHK

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Based on neuropsychologist Luria's proposition, facilitations such as speech and rhythmic intention are employed to regulate motor behaviors in Conductive Education (CE). However, recent studies in neurology revealed that slowness in information processing is one of the most common and persistent problems of cognitive impairment in neurological conditions such as stroke and traumatic brain injury, which seriously affect daily functions such as understanding information, making timely responses and fatigue easily due to cognitive overload. Similar problems can also be found in developmental conditions such as cerebral palsy. As there are emerging new understandings from cognitive neuroscience and cognitive rehabilitation, it would be timely to explore the neural basis of speed of information processing and potential strategies for mental slowness (MS).

Question

Can we modulate the cognitive rhythm, expressed here in terms of information processing speed, and improve MS in people with neurological impairments to achieve a better functional outcome?

Objectives

This review aims to explore the neural basis of the speed of information processing and how this is related to MS as induced by the neurological impairments. More importantly remedial strategies of MS will be evaluated, with an aim to see whether they reconciles with the principles of CE.

Method

Literature review

Discussion

Neural models of the speed of information processing (e.g., Processing Speed Theory) and the correlations of time and speed perceptions with brain structures have been developing rapidly in the past two decades. Some evidence points to their relationship with working memory, attention and executive function. However further research is required to use these models to explain MS due to neurological impairments. For people with stroke and brain injury, cognitive strategies (e.g., Time Pressure Management) have been developed with promising results. Components of these strategies are in compliance with the principles of CE which emphasizes problem solving and self-determination. Non-invasive brain modulation methods such as Transmagnetic Stimulation at specific brain areas demonstrated that such strategies can speed up cognitive functions such as linguistic processing time. Such evidence sheds light on the fact that processing speed may be modifiable under laboratory conditions and these compensatory strategies may clinically have positive effects for MS. Furthermore, whether the clinical improvement relates to the modified speed of information processing is not yet clear, due to limited available studies and unclear mechanism underlying the process. Preliminary evidence shows that intervention such as cognitive strategies benefits MS among the acquired conditions and fits in with the CE principles. However, there is a large gap in the literature on the neural mechanism of processing speed and intervention approaches for MS in developmental conditions.