people with MS. Therefore was our aim to find out whether patients still perceive any complications after this infection and to offer them pilot program of targeted physiotherapy.

Methods: In this single-centre study, people with MS who experienced covid-19 between January and March 2022 (when the omicron variant was dominant in Czechia) were contacted and structurally asked about the occurrence of any post-covid symptoms.

Results: In March 2023, 224 (75 men) out of 334 (103 men) patients who experienced covid-19 in previous year responded to the survey. The mean age of peoplewas 43.8 years (SD 8.9), mean disease duration 14.1 years (SD 8.3) and median EDSS 2.5 (range 0-7.5). A total of 68 patients (28%) suffered with symptoms lasting 12 weeks or longer. Most common symptoms included fatigue (54%), dyspnoe (29%), neurological deterioration (20%), joint pain (16%), sleep disturbance (8%), headache (7%) or others (17%). At the time of the survey, 41 people were still suffering from these symptoms.

The group of patients with postcovid difficulties did not differ significantly from the others who had the infection in age (p=0.362), duration of the disease (p=0.425) or level of disability (p=0.175).

A total of 6 patients participated in a pilot program to influence post-covid difficulties. The physiotherapy programme included elements of respiratory physiotherapy, muscle relaxation and instruction on appropriate fitness training. After completing the programme, participants experienced a reduction in fatigue and breathlessness and improved respiratory sterotype. The program was effective in both face-to-face and online versions.

Conclusion: Based on subjective patient reports, some people still suffer post-covid symptoms and therefore could benefit from special physiotherapy intervention.

Submission ID: 126; Submission Group: Technology Supported Rehabilitation; Submitter: Barbora Grosserová

Telerehabilitation options in people with multiple sclerosis Grosserova B1, Novotna K^{1,2}

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Background: Telerehabilitation as one of the forms of telemedicine became widespread especially during the challenging period of the coronavirus pandemic. In the field of neurology, it is mostly used for people with stroke, parkinson disease and especially multiple sclerosis (MS). The aim of the research was therefore to describe and evaluate the possibilities of telerehabilitation in people with MS.

Methods: Medical databases (Medline, Pedro, Cochrane) were searched with the keywords multiple sclerosis and telemedicine or telerehabilitation. The search was limited to publications from the last 15 years. Publications in English available in full-text were included in the analysis. Publications were assessed by 2 reviewers according to PEDRO score and only those with a PEDRO of more than 4 were included.

Results: A total of 56 articles on telerehabilitation in MS meeting the criteria were found. Most of them were devoted to exercises aimed to influence overall mobility (including balance), n=21. This was followed by various educational and motivational support programs, n=16 (most often with aim to increase overall physical activity level or to influence fatigue). Interventions focused on cognitive therapy (n=7) and psychotherapy in the form of cognitive-behavioural therapy (n=4) were of the highest methodological quality. Targeted training of upper limb function (n=3) or home transcranial stimulation (n=3) were also present.

Conclusion: Telerehabilitation is one of the ways to provide therapy to patients who for some reason (distance, disability, etc.) have problems to attend regular face-to-face therapies. The possibilities of these forms of therapy have been expanding, especially in recent years.

Submission ID: 127; Submission Group: Technology Supported Rehabilitation; Submitter: Cintia Ramari

Can real-time visual feedback on walking speed impact gait pattern, perception of effort, affective valence and symptom perception during an intermittent 12-minutes walking in low disabled people with multiple sclerosis? A pilot study

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Background: Walking impairments affect over 70% of people with multiple sclerosis (pwMS), with walking-fatigability and attentional deficits expanding this challenge. Adjustments in attentional control using real-time visual feedback is a potential intervention to improve attention during walk, and to apply for walking training to decrease walking-fatigability.

Objectives: The aim of this study was to investigate the impact of the real-time visual feedback of walking speed on spatiotemporal gait parameters, perception of effort, affective valence and symptom inventory.

Participants: Nine pwMS (48 ± 7.3 years, EDSS: 2.0 ± 1.03) and nine healthy controls (37 ± 14.8 years) were included. An intermittent 12-minutes walking protocol (6×2 min, 40 sec rest) were performed in two conditions: with and without feedback on walking speed. The protocols were applied using the GRAIL (Motek) in a self-paced treadmill with a semi-immersive virtual reality. Spatiotemporal parameters were averaged for each 2-min. Perception of effort and affective valence were reported during

the rests and symptom inventory was collected before and after the protocols.

Results: No significant changes in spatiotemporal parameters and affective response were detected (both groups and conditions), while a significant increase in the perception of effort was observed for HC in both conditions. The total score for the symptom inventory was significantly higher for pwMS after both protocols. Significant differences in walking speed and perception of effort were identified between MS patients and HC in both conditions. Although without significant change, a trend for the increase in walking speed was identified for pwMS in the feedback condition.

Conclusion: The intermittent 12-minutes walking with real-time feedback on walking speed did not significantly change spatiotemporal parameters and symptoms perception, however the identified trend of increment in walking speed suggest that real-time feedback could serve as a strategy for walking rehabilitation to maintain speed and decrease walking-fatigability.

Submission ID: 128; Submission Group: Outcome Measures; Submitter: Marta Tacchini EEG markers of cognitive impairment in MS: Event-Related Potentials to the Symbol Digit Modalities Test

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Background: Event-related potentials (ERPs) are valuable tools for the early detection and monitoring of cognitive impairment in people with Multiple Sclerosis (pwMS) and towards the evaluation of the effectiveness of treatment. The Symbol Digit Modalities Test (SDMT) is the gold-standard screening tool for cognitive processing speed, often impaired in pwMS. With the aid of ERPs, neurophysiological processes during SDMT can be quantitively assessed, potentially serving as an early biomarker for cognitive impairment.

Aim: To explore the ERPs correlates of the SDMT for the detection and monitoring of cognitive impairment in pwMS.

Methods: We developed an EEG-SDMT paradigm, with a list of symbols corresponding to a number at the top of a PC screen and symbol-digit pairs (180; 50% correct) presented at the center. Keypress reaction times (RTs) for correct/incorrect pairs are measured together with 32-channel EEG obtaining stimulus-averaged ERPs. Thirty pwMS (21 F; age 51.67 \pm 10.66 years) and 16 healthy controls (HC) (12 F; age 49.25 \pm 13.52 years) were recruited.

Results: SDMT-ERPs presented a positive peak in the centroparietal regions (amplitude: HC 14.07 \pm 5.05 μ V; pwMS 11.50 \pm 5.63 μ V; Wilcoxon test, FDR corrected p = n.s.) that displayed a significantly longer latency in pwMS (607.75 \pm 117.75 msec) vs HC (506.66 \pm 89.15 msec) (Wilcoxon test, FDR corrected p < 0.05). Latency was also significantly correlated with RTs in the computerized SDMT (r = .291; p < 0.05). RTs and raw scores in the clinical SDMT were significantly correlated (r = -.724; p < 0.01).

Conclusion: Our EEG-SDMT paradigm allowed to obtain an ERP correlate of neuroelectrical activity during SDMT performance, which was significantly affected in pwMS and cognitive impairment. These preliminary findings prompt further validation of this tool for the early detection of cognitive involvement, for monitoring the natural history and response to pharmacologic and non-pharmacologic interventions.

Submission ID: 129; Submission Group: Technology Supported Rehabilitation; Submitter: Cintia Ramari

Deficit In Reaction Time During Virtual Tasks Is Associated With Depression In Patients With Multiple Sclerosis

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Background: Multiple Sclerosis (MS) is a neurological disease, related to different factors and systems.

Symptoms such as fatigue, anxiety and depression impact the quality of life in MS patients. Rehabilitation programs have used virtual reality (VR) to monitor, control, maintain or improve functionality and increase transfer from virtual to reality in people with MS (pwMS). Objective: To evaluate the reaction time during a virtual reality task (VR) in pwMS and the association with fatigue, anxiety and depression. Methods: This cross-sectional study included 57 pwMS (age range: 23 - 77 years old, EDSS: 0 (-7.5)) and 27 healthy controls (age range: 23 - 57 years old). The beck Inventory was applied to evaluate depression and anxiety. The Modified Fatigue Impact Scale (MFIS) was used to measure fatigue perception. Reaction time was measured during a VR task using a software in computer. The reaction time was measured in milliseconds, and was the time taken between the beginning of the stimulus and the beginning of the motor response. A correlation Results: Significant correlations were found between MFIS and BDI for anxiety and depression; and, between BDI and reaction