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**September 2022 edition**

# Introduction

Welcome to **September** **2022** **GPA Evidence Updates**, bringing you latest evidence updates on physiotherapy interventions in some common conditions seen within the Ghanaian physiotherapy context. In this and subsequent editions, we bring you updates on Cerebral palsy, Low back pain, Stroke and Parkinson’s disease. We look forward to expanding the condition portfolio based on your interest and uptake, and the formation of an evidence-based practice group within GPA to further this agenda.

[GPA Evidence Updates](https://physioghana.org/gpa-evidence-updates/)is brought to you by the **Evidence-based Practice Research Group**, a research group within Ghana Physiotherapy Association (GPA) to promote evidence-based practice culture amongst physiotherapists and other colleagues within the rehabilitation community.

These updatespresent new systematic reviews and clinical practice guidelines identified and compiled from comprehensive searches of the [PubMed](https://pubmed.ncbi.nlm.nih.gov/advanced/) database based on search strategies developed by Dr Beatrice Sankah, a systematic reviewer and evidence-based practice expert. An archive of the monthly updates is available [here](http://physioghana.org/gpa-evidence-updates/evidence-archives/)**.**

In this update, each article title provides a link to the abstract in PubMed. For open-access articles, full text articles are accessible by clicking the Free full text link (indicted in red text near article title). Where you are interested in a full text article that is not available, please contact the team and efforts will be made to access it for your use. It is important to critically appraise the quality of the systematic reviews and clinical practice guidelines before applying them to your practice, we therefore recommend the [SIGN checklist](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.sign.ac.uk%2Fmedia%2F1721%2Fsrchecklist.doc&wdOrigin=BROWSELINK) for systematic reviews and the [AGREE tool](https://www.agreetrust.org/resource-centre/agree-ii/) for clinical practice guidelines.

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## Guidelines

*No guidelines found this month for Cerebral palsy, stroke, low back pain, and Parkinson’s disease****.***

## Systematic Reviews

### Cerebral palsy

*No relevant systematic reviews found this month for Cerebral palsy*

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### Low back pain

[Telehealth treatment for nonspecific low back pain: A review of the current state in mobile health](https://pubmed.ncbi.nlm.nih.gov/34786870/) [Free Full Text Article](https://onlinelibrary.wiley.com/doi/10.1002/pmrj.12738)

Tabacof L, Baker TS, Durbin JR et al.

PM R. 2022 Sep;14(9):1086-1098. doi: 10.1002/pmrj.12738.

**Results:** The study included seven concluded randomized-controlled trials and two study protocols reporting mobile health (mHealth) solutions for Low Back Pain (LBP). Six of the seven concluded trials found a significant improvement in self-reported numerical pain rating scale compared to the control group. A single trial compared a mHealth solution to physical therapy, with the majority of studies comparing interventions to "usual care." Substantial heterogeneity in reporting of sample characteristics was found, indicating a lack of standardization through the field.

**Interpretation:** Mobile Health solutions may positively impact people with LBP. Larger trials should be encouraged, and the field should coalesce around a set of baseline variables for collection and reporting. Because many interventions involve patient engagement, future trials should aim to further quantify adherence levels and begin to define telehealth "doses" associated with better outcomes

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### Stroke

[Head Acupuncture Plus Schuell's Language Rehabilitation for Post-Stroke Aphasia: A Systematic Review and Meta-Analysis of 32 Randomized Controlled Trials](https://link.springer.com/article/10.1007/s11655-022-3722-5)

Fu QW, Liu M, Zhang LZ, et al.

Chin J Integr Med. 2022 Aug;28(8):743-752. doi: 10.1007/s11655-022-3722-5.

**Results**: A total of 32 Randomized Controlled Trials (RCTs) with 1,968 patients were included and 51 comparisons were conducted classified as types of strokes and aphasia. (1) For patients with aphasia after ischemic stroke, Head Acupuncture (HA) plus post stroke aphasia (PSA) showed significantly higher accumulative markedly effective rate [relative risk (RR)=1.55, 95% confidence interval (CI): 1.19-2.02, I2=0%] and accumulative effective rate (RR=1.22, 95% CI: 1.09-1.36, I2=0%). (2) For patients with comprehensive types of strokes, HA plus PSA was more effective in increasing recovery rate (RR=1.89, 95% CI: 1.39-2.56, I2=0%), accumulative markedly effective rate (RR=1.53, 95% CI: 1.36-1.72, I2=9%) and accumulative effective rate (RR=1.14, 95% CI: 1.09-1.19, I2=34%) *(follow link for full details)*

**Conclusion:** HA plus Schuell's language rehabilitation (SLR) was significantly associated with better language ability and higher effective rate for patients with post-stroke aphasia, and HA should be operated cautiously especially during acupuncture at eye and neck.

[Effects of task-oriented rehabilitation of upper extremity after stroke: A systematic review](https://jpma.org.pk/article-details/11409?article_id=11409) [Free Full text article](https://jpma.org.pk/article-details/11409?article_id=11409)

Hussain M, Fatima A, Ahmad A, et al.

J Pak Med Assoc. 2022 Jul;72(7):1406-1415. doi: 10.47391/JPMA.3864.

**Results:** In this study, 28 articles were assessed, and 16(%) were included for detailed review. All studies varied significantly with PEDro scores between 6 and 10. There were 12(75%) high-quality studies and 4(25%) fell in fair category. All the studies showed significant results in the improvement of upper extremity after stroke through task-oriented training rehabilitation (p<0.05).

**Conclusion:** Evidence supports the beneficial effects of task-oriented rehabilitation for the improvement of upper extremity functions post-stroke.

[Effects of transcranial direct current stimulation for post-stroke depression: A systematic review and meta-analysis](https://pubmed.ncbi.nlm.nih.gov/35914485/) [Free Full text article](https://www.sciencedirect.com/science/article/pii/S1388245722006952?via%3Dihub)

Li Y, Li HP, Wu MX, et al.

Clin Neurophysiol. 2022 Oct;142:1-10. doi: 10.1016/j.clinph.2022.07.369.

**Results:** Eight studies involving 412 patients were included. These trials revealed a significant pooled effect size (standardized mean differences [SMD]) = 1.61, 95% confidence interval (CI) 1.02-2.19, P < 0.00001). For the subgroup analyses, neither comparisons of high- vs low-intensity or left dorsolateral prefrontal cortex vs primary motor cortex revealed a significant result. Transcranial direct current stimulation (tDCS) had no obvious effect on the anxiety state in patients with post-stroke depression (PSD) (SMD = 1.09, 95% CI, -0.22 to 2.40, P = 0.10), while it resulted in improved ability of daily life(ADL) in these patients(SMD = 0.82, 95% CI, 0.16-1.48, P = 0.01)

**Conclusion:** tDCS has an effect on improvement in PSD. However, it is still not clear which stimulus program is best.

[Electrophysiological correlates of action monitoring in brain-damaged patients: A systematic review](https://www.sciencedirect.com/science/article/abs/pii/S0028393222001920?via%3Dihub) [Free Full Text Article](https://www.sciencedirect.com/science/article/pii/S0028393222001920?via%3Dihub)

Pyasik M, Scandola M, Moro V.

Neuropsychologia . 2022 Sep 9;174:108333. doi: 10.1016/j.neuropsychologia.2022.108333.

**Results:** The first group included electroencephalography (EEG) studies on monitoring of self-performed erroneous and correct actions.Impaired error detection (decreased error-related negativity) was observed in patients with lesions in the performance-monitoring network, as compared to healthy controls. Less consistent results were shown for error positivity and behavioural error monitoring performance. The second group of studies on monitoring of others' actions reported decreased mu frequency suppression, impaired readiness potential in the affected hemisphere and decreased EEG indices of error observation (observed error positivity and theta power) in stroke patients.

**Conclusion:** As a whole, these results indicate distinct patterns of impaired neurophysiological activity related to monitoring one's own versus others' actions in patients with brain lesions. EEG recordings of this dissociation in the same patients might be a useful index of motor recovery, and therefore, potentially also beneficial in rehabilitation protocols.

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### Parkinson’s disease

[How Cognitive Reserve should Influence Rehabilitation Choices using Virtual Reality in Parkinson's Disease](https://pubmed.ncbi.nlm.nih.gov/36160828/)

[Free Full text article](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9507627/)

Pezzi L, Di Matteo A, Insabella R et al

Parkinsons Dis. 2022 Sep 16;2022:7389658. doi: 10.1155/2022/7389658

**Results:**  PubMed, Cochrane Library, Scopus, and Web of Sciences databases were analyzed to identify randomized clinical trials (RCT) and randomized pilot trials that addressed the rehabilitation of motor symptoms in subjects with Parkinson’s disease (PD) using Virtual reality (VR). Eighteen articles were eligible for review, including three randomized pilot trials. All studies aimed to evaluate the effect of VR on the motor aspects typically affected by PD (balance, postural control, risk of falls, walking, and reaching). The most widely adopted approach has been non-immersive VR, except for one study that used immersive VR.

**Conclusion:** Both the benefits of physical activity on the motor symptoms of patients with PD and the impact of cognitive reserve during the rehabilitation of these patients were highlighted. The analysis of the results allowed us to outline the ideal cognitive profile of patients with PD who can benefit from the effects of rehabilitation using VR.

[The effects of different types of Tai Chi exercises on motor function in patients with Parkinson's disease: A network meta-analysis](https://pubmed.ncbi.nlm.nih.gov/36105909/) [Free Full text article](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9465240/)

Lei H, Ma Z, Tian K et al.

Front Aging Neurosci. 2022 Aug 29; 14:936027. doi: 10.3389/fnagi.2022.936027

**Results:** A total of twenty trials were eligible, including 996 participants. In conventional meta-analysis, as for the UPDRSIII scale, 24-form simplified Tai Chi (SMD = -1.272, 95% CI [-2.036, -0.508], *P* < 0.05, I2 > 50%), Tai Chi exercise program (SMD = -0.839, 95% CI [-1.828, 0.151], *P* > 0.05, I2 > 50%), 8-form simplified Yang style Tai Chi (SMD = -0.325, 95% CI [-1.362, 0.713], *P* > 0.05, I2 > 50%), and 8-form simplified Chen style Tai Chi (SMD = -0.28, 95% CI [-0.97, 0.42], *P* > 0.05, I2 > 50%) were statistically more efficient than the control group. For Berg Balance Scale (BBS) outcome, 24-form simplified Tai Chi (MD = 3.979, 95% CI [3.364, 4.595], *P* < 0.05, I2 <50%), Tai Chi exercise program (MD = 5.00, 95% CI [2.07, 7.93], *P* > 0.05, I2 > 50%), and 8-form simplified Chen style Tai Chi (MD = 1.25, 95% CI [0.52, 1.98], *P* < 0.05, I2 > 50%) were better than the control group. In the network meta-analysis, the results of UPDRSIII were as follows: 24-form > TCEP > 8-form YS > 8-form CS > control. The ranking probability of BBS was as follows: TCEP > 24-form > 8-form CS > control.

**Conclusion:** Among the four treatments studied, 24-form Tai Chi and Tai Chi exercise programs have shown better efficacy than other types. Our study provides new insights into exercise therapy for PD and may contribute to the formulation of a clinical exercise prescription.

[Psychometric properties of performance-based measures of physical function administered via telehealth among people with chronic conditions: A systematic review](https://pubmed.ncbi.nlm.nih.gov/36083879/)

Walsh C, Cahalan R, Hinman R et al.

PLoS One. 2022 Sep 9;17(9):e0274349. doi: 10.1371/journal.pone.0274349

**Results:**Five articles met the eligibility criteria. These included patients with Parkinson's Disease (n = 2), stroke (n = 1), cystic fibrosis (n = 1) and chronic heart failure (n = 1). Fifteen performance-based measures of physical function administered via videoconferencing were investigated, spanning measures of functional balance (n = 7), other measures of general functional capacity (n = 4), exercise capacity (n = 2), and functional strength (n = 2). Studies were conducted in Australia (n = 4) and the United States (n = 1). Reliability was reported for twelve measures, with all twelve demonstrating sufficient inter-rater and intra-rater reliability. Criterion validity for all fifteen measures was reported, with eight demonstrating sufficient validity and the remaining seven demonstrating indeterminate validity. No studies reported data on measurement error or responsiveness.

**Conclusions:**Several performance-based measures of physical function across the domains of exercise capacity, strength, balance and general functional capacity may have sufficient reliability and criterion validity when administered via telehealth. However, the evidence is of low-very low quality, reflecting the small number of studies conducted and the small sample sizes included in the studies. Future research is needed to explore the measurement error, responsiveness, interpretability and feasibility of these measures administered via telehealth

[Effects of Resistance Training on Motor- and Non-Motor Symptoms in Patients with Parkinson's Disease: A Systematic Review and Meta-Analysis](https://pubmed.ncbi.nlm.nih.gov/35754291/)

Gollan R, Ernst M, Emma Lieker E et al.

J Parkinsons Dis. 2022; 12(6):1783-1806. doi: 10.3233/JPD-223252.

**Results:** When comparing Resistance Training (RT) with passive control groups, the meta-analyses showed significant large effects on muscle strength (SMD = -0.84, 95% CI -1.29--0.39, p = 0.0003), motor impairment (SMD = -0.81, 95% CI -1.34--0.27, p = 0.003), mobility and balance (MD = -1.81, 95% CI -3.13--0.49, p = 0.007), and small significant effects on QoL (SMD = -0.48, 95% CI -0.86--0.10, p = 0.01). RT compared with physically active control groups reached no significant results for any outcome.

**Conclusion:** RT improves muscle strength, motor impairment, mobility, and balance, QoL, and depression in Parkinson’s disease (PD) patients. However, it is not superior to other physically active interventions. Therefore, exercise is important for PD patients but according to this analysis, its type is of secondary interest.

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# Abbreviations

Standardized Mean Difference (SMD); Tai Chi exercise program (TCEP); 8-form simplified Chen style Tai Chi (8-form CS); 8-form simplified Yang style Tai Chi (8-form YS); Unified-Parkinson Disease Rating Scale (MDS-UPDRS) Part III Motor Function Examination Subscale (MDS-UPDRSIII); Berg Balance Scale (BBS).

# Notes

*Please note that the links provided to each identified record should not be taken as endorsement of records. We have made reasonable efforts to ensure accuracy of all articles, however we cannot guarantee total accuracy or completeness. Hence, as advised earlier, please endeavor to critically appraise the papers before use.*

For all feedbacks, comments, and recommendations for improvements, please contact us

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