



Physiotherapy Management Of Right-Sided Bell's Palsy Using Electrical Stimulation, Massage, And Mirror Exercise At Hermina Soreang Hospital

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Abstract

Bell's palsy is a unilateral peripheral facial nerve paralysis that may cause facial asymmetry, impaired eye closure, difficulties with eating and drinking, and psychosocial consequences. This scientific paper aims to describe clinical changes following physiotherapy management consisting of electrical stimulation (ES), massage, and mirror exercise in a patient with right-sided Bell's palsy. A descriptive case-report method was used in a 15-year-old female patient who underwent six physiotherapy sessions from March 7 to April 25, 2026. Evaluation was performed using the Numeric Rating Scale (NRS), Ugo Fisch Scale, Manual Muscle Testing (MMT), and the Facial Disability Index (FDI) instrument as used in the case report. Tenderness decreased from 3 to 1, movement-related pain from 4 to 2, and resting pain from 1 to 0. The mean MMT score of eight facial muscles increased from 2.0 at T1 to 5.0 at T6. The Ugo Fisch score increased from 58 to 99. The mean FDI physical-domain score increased from 2.8 to 5.0 and the social-domain score from 3.6 to 5.0. These findings indicate improvements in pain, motor function, and functional ability after six intervention sessions. However, because this case report had no control group and used combined modalities, the changes cannot be causally attributed to any single modality. Combined intervention may be considered as part of an individualized rehabilitation program with periodic monitoring.

Keywords: Bell's Palsy, Electrical Stimulation, Massage, Mirror Exercise

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1. Introduction

Bell's palsy is a peripheral neuropathy of the facial nerve that commonly presents as acute unilateral facial weakness or paralysis. This condition may impair facial expression, eye closure, oral function, communication, and psychosocial well-being. Although most patients experience spontaneous recovery, some may have incomplete recovery or residual symptoms; therefore, multidisciplinary management and rehabilitation should be adapted to the phase and severity of impairment (Hohman et al., 2024; Loyo et al., 2020; NINDS, 2026).

Facial rehabilitation may include directed facial-expression exercises, visual biofeedback, massage, eye-protection education, and electrotherapy modalities in selected conditions. Evidence regarding physical therapy for facial palsy continues to evolve. Systematic reviews indicate potential benefits of physiotherapy, but heterogeneity of interventions and evidence quality means that findings are not always consistent across studies. Therefore, the outcome of an individual case should be interpreted as a description of clinical response rather than evidence of causal effectiveness (Paolucci et al., 2023; Santiago et al., 2024; Tuncay et al., 2022).

Physiotherapy modalities play an important role in reducing pain, increasing the strength of facial-expression muscles, and restoring facial symmetry in patients with Bell's palsy. A multimodal approach involving technologies and techniques such as Electrical Stimulation (ES), facial massage, and mirror exercise has been reported as highly effective in accelerating recovery of facial motor function. The combination of these interventions synergistically supports recovery of cranial nerve VII (the facial nerve) toward optimal function (Anggraeni, 2022; Nugroho & Pratama, 2021).

Electrical Stimulation (ES) is an electrotherapy intervention that uses low-frequency electrical current to maintain contractility and tone in flaccid paralyzed facial muscles. Manual therapy in the form of facial massage is used to improve local microcirculation, facilitate lymphatic flow, and prevent secondary complications such as stiffness or contracture through specific techniques applied against gravity. Mirror exercise aims to actively retrain facial-expression motor coordination by using visual feedback to stimulate motor memory through neuroplasticity mechanisms. The combination of these three modalities provides a holistic approach to managing facial muscle paralysis in right-sided Bell's palsy (Anjani, 2022; Az-Zahra et al., 2023; Paolucci et al., 2023).

In the reported case, the patient had right-sided Bell's palsy with right facial muscle weakness, lagophthalmos, facial asymmetry, impaired oral function, tenderness, and movement-related pain. The authors used a combination of ES, massage, and mirror exercise





for six sessions. This scientific paper aims to describe the management process and changes in measurement outcomes throughout the physiotherapy program.

This study aims to evaluate the extent of effectiveness of physiotherapy modalities consisting of Electrical Stimulation (ES), Massage, and Mirror Exercise in reducing pain, increasing muscle strength, and improving facial movement symmetry in a patient with right-sided Bell's palsy at Hermina Soreang Hospital. The findings are expected to contribute knowledge toward the development of physiotherapy management strategies for patients with right-sided Bell's palsy.

2. Research Methods

This study used a descriptive case-report design involving a 15-year-old female patient diagnosed with right-sided Bell's palsy who received physiotherapy at Hermina Soreang Hospital from March 7 to April 25, 2026, for six treatment sessions. Data were obtained from the final-project case document, including patient history, physiotherapy examination, intervention procedures, and T1–T6 evaluation results.

The assessment included history taking, static and dynamic observation, palpation, movement examination, and functional assessment. Pain intensity was assessed using the Numeric Rating Scale (NRS) for resting pain, tenderness, and movement-related pain; facial motor function was evaluated using the Ugo Fisch Scale; facial muscle strength was assessed using Manual Muscle Testing (MMT); and functional and social disability was assessed using the Facial Disability Index (FDI) (Aras et al., 2020; Tri Nurhayati et al., 2023; Kurniawan & Nur, 2022; Ilda, 2026; VanSwearingen & Brach, 2026).

The physiotherapy program consisted of electrical stimulation (ES), facial massage, and mirror exercises/facial-expression training, supplemented by a home exercise program and education on facial and eye protection. ES was applied to the affected facial muscles at 1–5 Hz with a pulse duration of 100–300 ms for approximately 10 minutes, followed by gentle facial massage for 10–15 minutes and mirror exercises involving selected facial movements performed with visual feedback. Treatment outcomes were evaluated at each session (T1–T6). Data were analyzed descriptively by comparing baseline and final measurements and examining changes across sessions. For MMT, the mean score of eight facial muscles was calculated, while FDI scores were summarized for the physical and social domains. No inferential statistical analysis was performed because the study involved only one subject.





3. Results and Discussion

a. Results

The decrease in NRS scores indicates improvement in pain symptoms. Massage and exercise may provide sensorimotor input and improve tissue comfort, while electrical stimulation can theoretically facilitate contraction in paretic muscles. However, evidence regarding ES in Bell's palsy remains heterogeneous, and its use should consider disease phase, reinnervation status, dosage, and patient response. Because the interventions in this case were delivered in combination, the individual contribution of ES cannot be determined.

The increase in mean MMT from 2.0 to 5.0 and in Ugo Fisch score from 58 to 99 indicates a substantial change in motor function. Facial exercises using selective movements and visual feedback may help the patient direct movement more symmetrically. Facial rehabilitation literature also emphasizes the importance of controlled exercise to avoid excessive movement and to monitor synkinesis during recovery.

Improved physical and social function scores indicate that motor changes occurred alongside better activity performance and the patient's perception of her facial condition. This is important because facial palsy is not only a motor disorder but may also affect communication, eating and drinking, self-confidence, and social participation. Home-program education and eye protection remain important, particularly in patients with lagophthalmos.

The findings of this case should be interpreted cautiously. There was no control group, no electrophysiological measurement, the follow-up duration was limited, and the intervention consisted of several components delivered simultaneously. In addition, some terminology and measurement formats in the source document did not fully follow international instrument standards. Accordingly, the findings are best positioned as a description of an individual clinical response that may serve as a learning basis, rather than evidence that any single modality caused recovery.



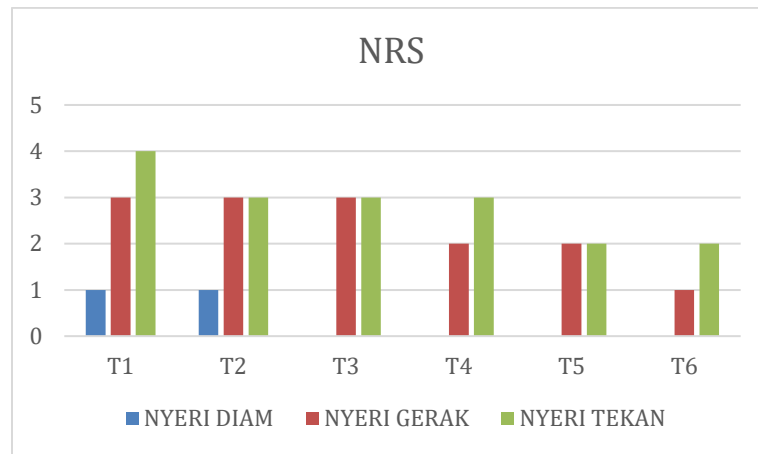


Figure 1. Graph of Pain Evaluation Using the NRS

Resting pain decreased from 1 to 0 at T3 and remained at 0 through T6. Tenderness decreased from 3 to 1, while movement-related pain decreased from 4 to 2. The greatest changes were observed in movement-related pain and tenderness, whereas resting pain resolved earlier.

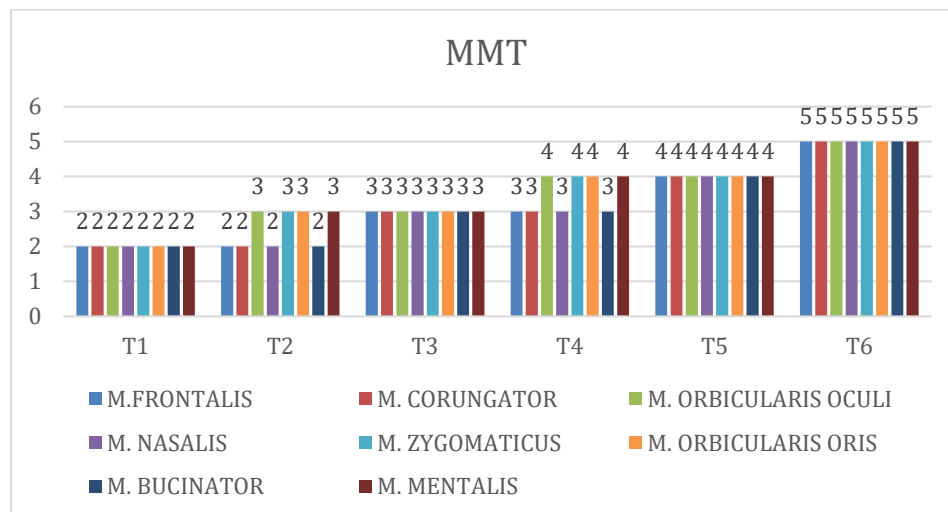


Figure 2. Graph of Muscle Strength Evaluation Using MMT

The mean MMT score of the eight muscles increased gradually from 2.0 at T1 to 5.0 at T6. Individually, all muscles reached a score of 5 at T6. This pattern indicates improved contraction ability and functional movement during the observation period.



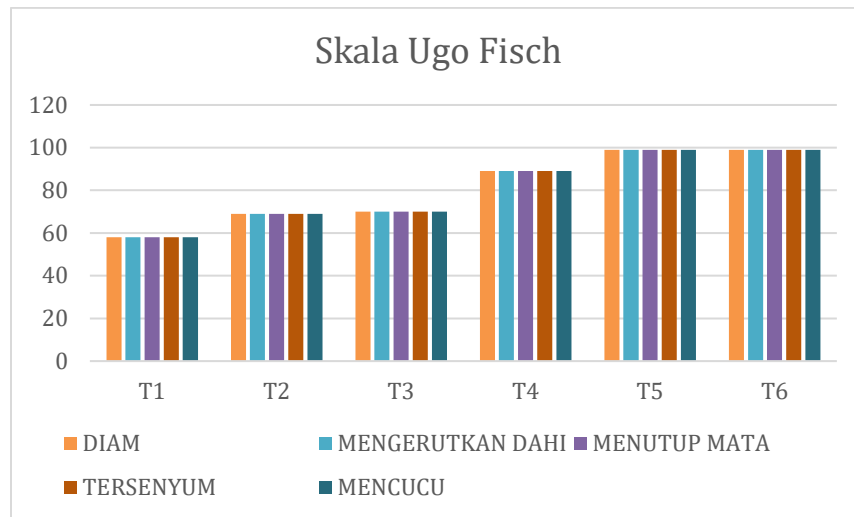


Figure 3. Graph of Ugo Fisch Scale Evaluation

The Ugo Fisch score increased from 58 at T1 to 99 at T5 and remained 99 at T6. The largest increase occurred between T3 and T4, from 70 to 89.

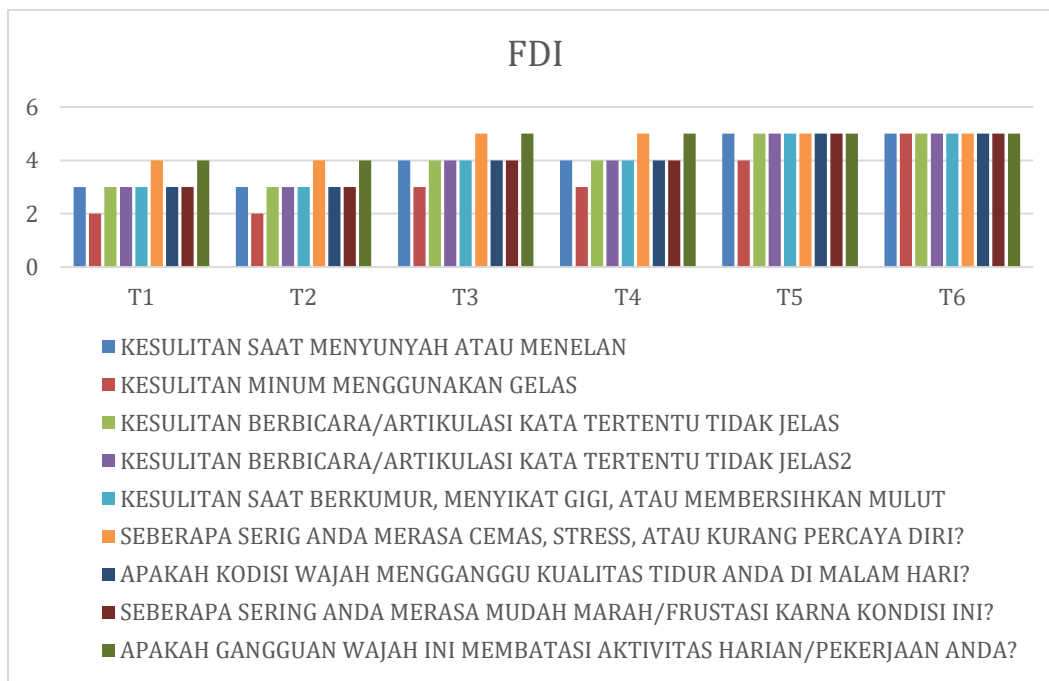


Figure 4. Graph of Functional Ability Evaluation Using the FDI





The mean score of the five physical-function items increased from 2.8 to 5.0, while the mean score of the five social/well-being items increased from 3.6 to 5.0. Improvement began to appear at T3 and reached the maximum value at T6. Because the FDI format in the source document used a 1-5 response scale, these values were retained as case-form scores and were not converted to the standard 0-100 FDI score.

b. Discussion

Overall, the patient's condition showed very good progress. After six therapy sessions, pain decreased markedly, facial muscles became stronger, and the patient was able to return to more normal activities. These findings indicate the importance of facial therapy in recovery from facial nerve paralysis and in preventing stiffness or permanent impairment. However, Bell's palsy has a natural course that allows spontaneous recovery; therefore, the observed improvement cannot be definitively separated from natural recovery.

4. Conclusion

In this case of a 15-year-old patient with right-sided Bell's palsy, a six-session physiotherapy program combining electrical stimulation, facial massage, mirror exercise, and education was associated with clinical improvements across all assessed parameters. Resting pain decreased from NRS 1 to 0, tenderness from 3 to 1, and movement-related pain from 4 to 2, while the mean MMT score of eight facial muscles increased from 2.0 to 5.0, the Ugo Fisch score from 58 to 99, the mean FDI physical-function score from 2.8 to 5.0, and the social-domain score from 3.6 to 5.0. Electrical stimulation was used to provide muscle stimulation during facial paralysis, massage supported relaxation and circulation, and mirror exercises facilitated facial movement retraining through visual feedback. Overall, the combined program and education were associated with positive clinical changes; however, because this was an uncontrolled single-case study using multiple interventions simultaneously, the findings do not establish causality or the effectiveness of any individual modality. These results support individualized physiotherapy with serial assessment as part of comprehensive Bell's palsy management.

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