SUPPLEMENTARY

The details of conventional comprehensive rehabilitation therapy

Conventional rehabilitation components align with evidence-based guidelines for CAI. The detailed procedures are as follows: (1) Conventional pharmacological treatment – oral non-steroidal anti-inflammatory drugs (e.g. ibuprofen 400 mg) twice daily for 1 week, then as needed for pain (≤3 days/week). (2) Arthrolysis – pain was assessed using a 0–10 numeric rating scale (NRS) and arthrolysis techniques were applied to the ankle joint: Grades I–II (gentle oscillations) for NRS ≤3; Grade III (moderate oscillations) for NRS 4–6 with stiffness; Grade IV (deep oscillations) for NRS ＞6 with adhesions. (3) Joint traction therapy –The traction force was applied smoothly, ensuring the patient experienced mild muscle tension or slight pain but without inducing reflexive muscle spasms. Each session lasted 10–20 minutes and was administered once daily. (4) Muscle strength and endurance training – muscle training followed 'FITT' principles: frequency (5 days/week), intensity (60%–80% 1RM), time (3 sets × 15 reps), type (eccentric strengthening for peroneals, isometrics for tibialis anterior). This training programme includes manual resistance training, isometric training, isotonic training and muscle endurance training (using both isotonic and isometric techniques). (4) Traditional Chinese medicine herbal fumigation – TCM herbal fumigation used a standardised formula (Duhuo Jisheng Decoction) [33], applied via nebulisation at 40°C–45°C for 20 minutes. Nebulised herbal solutions were used for fumigation therapy, with appropriate temperature, concentration and humidity, as well as herbal ion penetration therapy for ankle joint injuries. (6) Proprioception training – The patient maintained a semi-squat position with knees bent and performed self-directed ball-tapping exercises in various directions for 2 minutes per session. This training session was arranged once daily, 6 days per week. For balancing, the patient used an Airex Balance Pad (Airex AG, Sins, Switzerland), and for ball-tapping, the patient tapped a 20 cm ball placed 30 cm anteriorly, medially and laterally, alternating directions.