

Yueh-Ling Hsieh*, Chen-Chia Yang, Ya-Chien Fan. Therapeutic Ultrasound Combined With Transplantation Of Mesenchymal Stem Cells Potentially Induces Granulomatous Inflammation In A Sciatic Nerve Crush Model. WCPT-AWP & ACPT Congress 2013. Sep. 5-9, 2013, Taichung, Taiwan.

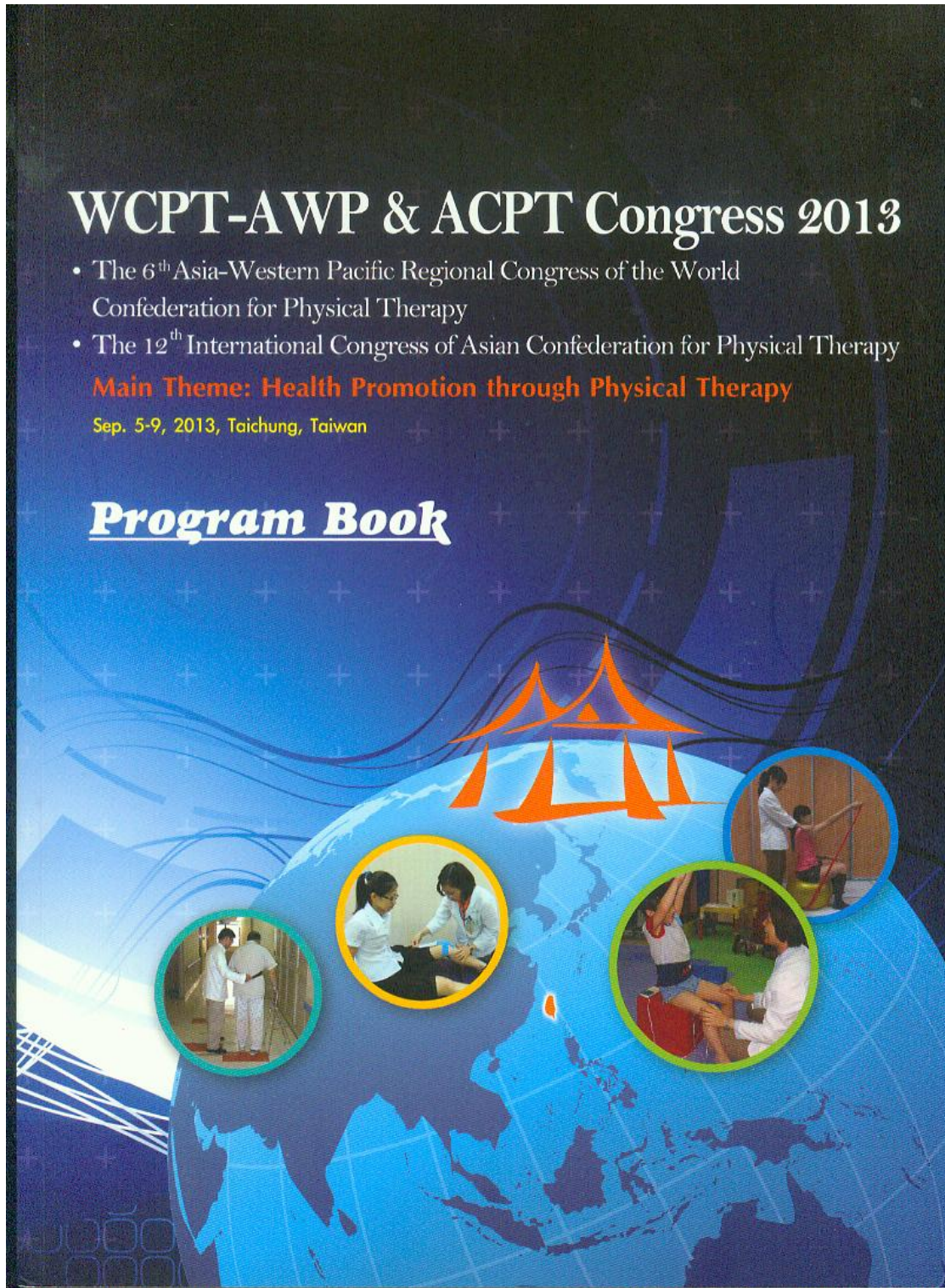
WCPT-AWP & ACPT Congress 2013

- The 6th Asia-Western Pacific Regional Congress of the World Confederation for Physical Therapy
- The 12th International Congress of Asian Confederation for Physical Therapy

Main Theme: Health Promotion through Physical Therapy

Sep. 5-9, 2013, Taichung, Taiwan

Program Book



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**THERAPEUTIC ULTRASOUND COMBINED WITH
TRANSPLANTATION OF MESENCHYMAL STEM CELLS
POTENTIALLY INDUCES GRANULOMATOUS
INFLAMMATION IN A SCIATIC NERVE CRUSH MODEL**

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ABSTRACT

Background and Purpose: Establishment of optimal regeneration following mesenchymal stem cells (MSC) transplantation in peripheral nerve lesions continues to be a challenge for research. The effects of therapeutic ultrasound (US) in combination with transplantation of MSCs in promoting sciatic nerve regeneration from crush injury were investigated.

Materials/Methods: Adult male SD rats received sciatic nerve crush injury by the vessel clamp for 20-minute were divided into three groups: crush injury + MSC transplant + US (Group I), crush injury + MSC transplant (Group II), crush injury + US (Group III) and crush injury (Group IV). Pulsed mode of US ($I_{SATA}=0.25 \text{ W/cm}^2$, 50% duty cycle) was applied at area of injured nerve for consecutive 7 days 3 days after MSC transplantation. Outcome assessments including sciatic function index (SFI), vertical activity (VA), angle of ankle (AA), electrophysiological and histological analysis were examined.

Results: No significant differences in SFI, VA, AA, amplitudes and onset latencies of compound muscle action potentials were found among Group I, II and III. But aggressive granulomatous and inflammatory formation examined by haematoxylin and eosin staining were found in Group I.

Conclusions and Clinical Relevance: The synergistic effects of US to nerve regeneration and functional recovery was absent in crush sciatic nerve with MSC transplantation. Moreover, these results suggest that US may be primarily responsible for induction of inflammatory cell infiltration may be involved in the granuloma formation after MSC transplantation in nerve injury.