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1. 下列醫學短文為有關中風病患感覺動作重建的研究文獻摘要

BACKGROUND AND PURPOSE: Thermal stimulation (TS) is commonly used in orthopedic rehabilitation, but the role of TS in the facilitation of sensorimotor recovery in hemiplegic patients remains unknown. This study addressed the issue of TS intervention in the facilitation of functional outcomes. METHODS: Forty-six stroke survivors were randomly assigned to standard rehabilitation treatment and standard treatment plus TS (30 minutes daily for 6 weeks). Twenty-nine patients completed the experiment. Six measures, including Brunnstrom stage, modified motor assessment scale, grasping strength, angles of wrist extension and flexion, sensation by monofilament, and muscle tone by modified Ashworth scale, were performed weekly to evaluate sensory and motor functional outcomes. RESULTS: The performance of Brunnstrom stage and wrist extension and sensation were improved significantly after TS intervention. Recovery rates of 6 measures after TS were significantly higher than those of the control, except for grasping. Similar muscle tones were found in both groups. CONCLUSIONS: TS on the paretic hand significantly enhances the recovery of several aspects of sensory and motor functions in hemiplegic stroke patients. (Stroke. 2005 Dec;36(12):2665-9)

A. 請依據摘要內容，分別以中文與英文為此篇論文定出適當的標題(中文少於 30 字，英文字母少於 85 字，且中英文句義必需相同)(10%)
B. 中風病患的感覺程度是如何被評估出來的？簡述之(4%)?
C. 中風病患經過治療後，有那些項目與正常對照組並沒有產生明顯差異？(6%)

2. 下列醫學短文為有關鏡像神經元(mirror neuron)的簡介摘要

A mirror neuron is a neuron that fires both when an animal acts and when the animal observes the same action performed by another. Thus, the neuron "mirrors" the behavior of the other, as though the observer were itself acting. Such neurons have been directly observed in primate and other species including birds. In humans, brain activity consistent with that of mirror neurons has been found in the premotor cortex, the supplementary motor area, the primary somatosensory cortex and the inferior parietal cortex. Some scientists consider mirror neurons one of the most important recent discoveries in neuroscience.

(背面仍有題目,請繼續作答)

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Among them is V.S. Ramachandran, who believes they might be very important in imitation and language acquisition. However, despite the excitement generated by these findings, to date no widely accepted neural or computational models have been put forward to describe how mirror neuron activity supports cognitive functions such as imitation. The function of the mirror system is a subject of much speculation. Many researchers in cognitive neuroscience and cognitive psychology consider that this system provides the physiological mechanism for the perception action coupling. These mirror neurons may be important for understanding the actions of other people, and for learning new skills by imitation. Some researchers also speculate that mirror systems may simulate observed actions, and thus contribute to theory of mind skills, while others relate mirror neurons to language abilities. It has also been proposed that problems with the mirror system may underlie cognitive disorders, particularly autism.

A. 請依據文章內容，為何病人的鏡像神經元活動可能與物理治療師臨床作為有關?舉出一個實例並指出在本文內容的依據(8%)

B. 依據本文，為何鏡像神經元是神經科學非常重要的發現?(4%)

C. 是非題：下列哪些標題與本文的內容有關 (8%)

a.( ) Infants predict other people's action goals

b.( ) Rapid reproduction of vowel-vowel sequences

c.( ) Understanding emotions in others

d.( ) Many children are picky eaters

D. "The neuron "mirrors" the behavior of the other, as though the observer were itself acting". 請以英文重新改寫本句(10%)

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3. Please rewrite the following single paragraph abstract into a structured one (Background and purpose, Method, Results, Conclusion) (20%).

The abstract is adopted from the article "Circulating bioactive and immunoreactive IGF-I remain stable in women, despite physical fitness improvements after 8 weeks of resistance, aerobic, and combined exercise training" by Nindl BC, Alemany JA, Tuckow AP, Rarick KR, Staab JS, Kraemer WJ, Maresh CM, Spiering BA, Hatfield DL, Flyvbjerg A, Frystyk J. Journal of Applied Physiology, 2010:109(1):112-20.

Insulin-like growth factor-I (IGF-I) is regulated by a number of IGF-binding proteins (IGFBPs) and proteases that influence IGF-I bioactivity. A specific IGF-I kinase receptor activation assay (KIRA) has been developed that determines the ability of IGF-I to activate the IGF-I receptor by quantification of intracellular receptor autophosphorylation on IGF-I binding. KIRA-assessed IGF-I bioactivity has not been utilized within the context of chronic exercise training paradigms. This study measured total and free immunoreactive IGF-I, bioactive IGF-I, and IGFBP-1, -2, and -3 before (Pre), during (Mid), and after (Post) 8 wk of exercise training in young, healthy women, who were randomized into one of four groups: control (n = 10), resistance (n = 18), aerobic (n = 13), and combined (n = 15) exercise training. The training programs were effective in improving physical fitness specific to the exercise mode engaged in: increases were observed for lean mass (approximately 2%), aerobic fitness (6-7%), and upper (20-24%) and lower (15-48%) body strength (all P values < 0.05). By contrast, no time, group, or interaction effects were observed for the circulating IGF-I system, as immunoreactive total (Pre = 264 +/- 16 microg/l; Mid = 268 +/- 17 microg/l; Post = 271 +/- 17 microg/l), free (Pre = 0.70 +/- 0.1 microg/l; Mid = 0.63 +/- 0.1 microg/l; Post = 0.63 +/- 0.2 microg/l) and bioactive (Pre = 2.35 +/- 0.3 microg/l; Mid = 2.25 +/- 0.3 microg/l; Post = 2.33 +/- 0.3 microg/l) IGF-I were unchanged throughout the study. All IGFBP measures were also unchanged. We conclude that increased lean mass, aerobic fitness, and upper and lower body strength resulting from an 8-wk exercise training programs can occur without concomitant increases in either circulating bioactive or immunoreactive IGF-I, as well as associated IGFBPs. In terms of reflecting positive anabolic neuromuscular outcomes, these data do not support a role for endocrine-derived IGF-I.

(背面仍有題目,請繼續作答)

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4. Please read the attached breviaries (Why does our survival hinge on the quality of our academic programs? So how can our profession achieve its full potential? pp1247-1248) and write a summary of 500 words in Chinese (30%). The breviaries are adopted from the 40th Mary McMillan Lecture of American Physical Therapy Association "The best we can be is yet to come" by Carolee J Winstein. Physical Therapy 2009;89(11):1236-4191249.

Why Does Our Survival Hinge on the Quality of Our Academic Programs?

Starting last November, I conducted a series of interviews in connection with the preparation for this lecture. I asked the same questions during each interview. One of my questions was: How would you rank the relative importance of each of the 3 pillars of the physical therapy profession—education, practice, and research? Most of the executive leadership I interviewed at APTA headquarters thought they were equally important and that you could not really have one without the other. Rob Batarla, APTA's Chief Financial Officer, was an exception. He said it was a no-brainer—education is the most important, with practice and research tied for second place. He argued that without practice, you do not know what is going on, and without research, you do not know what *will* be going on.

Yet when you examine the recent strategic plan for APTA, 14 the objectives for education are almost entirely focused on clinical education and postprofessional clinical residencies and fellowship programs. There was only one objective to "assess the current and projected needs in physical therapy academic education." It is concerning when the group of academic administrators is organized as a special interest group—and considered primarily a forum or venue for networking and exchange of ideas, but not for strong leadership. I am aware that there is a proposal to form a new organization of academic physical therapist programs that wishes to take a strong and active leadership role in setting the agenda for improving the profession. I am encouraged by this proposal and consider that it will become even more important for giving guidance as we navigate through the impending health care reform.

It was Jim Gordon who articulated the best answer to my 3-pillar question. He said, This is a trick question, of course. I wouldn't think of these as separate and distinct pillars. The overall purpose of our profession is to better the health of humans, and, of course, clinical practice is where that happens. But sound clinical practice rests on a foundation that includes research (evidence) and education (professional and postprofessional). Without this foundation, our practice is no more than quackery. Furthermore, both research and education depend on welltrained and dedicated physical therapist faculty members with access to adequate resources. These can only exist within strong academic physical therapy programs at universities that are

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effort. PTClinResNet was an example. We should look to our neighbors in Canada for current models of effective networks.

Finally, we must acknowledge the complexity of the problem and develop effective interdisciplinary collaborations outside the profession with engineering, medicine, behavioral scientists, and other health care professionals, all with common but unique strengths. Let's stop pulling the patient into parts. We can step up to the plate and take a leadership role in this process. Remember, we are change agents; this is what we do with our patients, and we are passionate about our profession and its future.