

本試題是否可以使用計算機：可使用，不可使用（請命題老師勾選）

一、解釋名詞 (20%) 每題 4 分

1. rule of nines
2. ergonomics
3. topographical orientation
4. steppage gait
5. dystonia

二、問答題 (40%)

1. 肌肉做功(muscle work)可分為兩大類：一類為「動態做功(dynamic work)」，另一類為「靜態做功(static work)」。肌肉收縮(muscle contraction)型態可分為 ① isometric contraction ② isotonic contraction ③ concentric contraction ④ eccentric contraction ⑤ isokinetic contraction

試問：

- (1)上述哪些肌肉收縮型態屬於動態做功?哪些屬於靜態做功呢? (5%)
 - (2)各種肌肉收縮型態的定義為何?並各自列舉一例依此型態設計之臨床治療活動? (15%)
2. Ms. H, 32-year old, is an assistant-engineer who works in a semiconductor foundry. The major part of her work is the programming and numerical analysis by using the keyboard and especially the mouse of computer. Five months ago, she felt numbness and tingling of her 1st, 2nd, 3rd and half of 4th digits. Sometimes, the night pain was severe enough to waken her. Recently, hand weakness, especially loss of pinch strength or difficulty holding and picking up objects was found. The problem of shrinkage and weakness of the muscle at the base of her right thumb was getting worse and worse. In addition, she also usually complaint about the pain located at the base MCP (or CMC) joint and along the dorsal side of the thumb, often with popping sensations, weakness and loss of motion. Thumb motion may be difficult and painful, particularly when pinching or grasping objects. Those uncomfortable conditions made her difficult to do her job well. Thus, she requested for leave around three months from her company to deal with these problems. She visited Departments of the Orthopedics and Occupational Health in a Medical Center in Tainan City and then was referred to OT. She plans to go back her "original" job two months later.
- (1) 請問這位個案可能的診斷為何?身為一位 OT, 你會用何種測試或評估再確認其診斷呢? (10%)
 - (2) 身為 OT, 你該如何為這位個案制定治療策略並防止其再度復發呢? (10%)

(接續下頁)

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三、文獻閱讀題(40%)

1. 請閱讀此文章摘要並回答相關問題:

Kinematic Analysis of Upper Limbs and Trunk Movement During Bilateral Movement After Stroke

Sylvie Messier, PhD, OT, Daniel Bourbonnais, PhD, OT, Johanne Desrosiers, PhD, OT, Yves Roy, MSc

ABSTRACT. Messier S, Bourbonnais D, Desrosiers J, Roy Y. Kinematic analysis of upper limbs and trunk movement during bilateral movement after stroke. Arch Phys Med Rehabil 2006; 87:1463-70.

Objective: To compare the kinematics of the upper limbs and trunk during unilateral and parallel bilateral tasks in subjects with hemiparesis and control subjects.

Design: Comparative study.

Setting: Geriatric center offering rehabilitation services.

Participants: Convenience sample of 15 persons (age, 69.4 ± 12.0 y; ≥ 3 mo poststroke) recruited in a geriatric center with rehabilitation services, and 13 control persons (67.8 ± 7.5 y) participated in the study.

Interventions: Not applicable.

Main Outcome Measures: Unilateral and bilateral movements toward 1 or 2 targets located beyond arm's length and positioned in 3 directions. Angular changes of both upper limbs and trunk were characterized in the sagittal, frontal, and horizontal planes.

Results: During the bilateral task, the deficits of the kinematic joints of the paretic upper limb persisted in subjects with hemiparesis as compared with the corresponding upper limb in the control subjects (abduction shoulder: subjects with hemiparesis, $5.7^\circ \pm 5.3^\circ$; control subjects, $0.7^\circ \pm 4.8^\circ$; extension elbow: subjects with hemiparesis, $38.2^\circ \pm 14.2^\circ$; control subjects, $52.8^\circ \pm 12.5^\circ$) with a marked flexion of the trunk (subjects with hemiparesis, $33.7^\circ \pm 8.7^\circ$; control subjects, $26.8^\circ \pm 5.8^\circ$). The elbow extension of the nonparetic upper limb was reduced (subjects with hemiparesis, $41.0^\circ \pm 13.6^\circ$; control subjects, $52.8^\circ \pm 12.5^\circ$).

Conclusions: The use of parallel bilateral reaching tasks and placing movements of the upper extremities in the subjects with hemiparesis contributed an increase in the trunk flexion rather than improve the motor performance of the paretic upper limb, especially with regard to increasing elbow extension.

Key Words: Movement; Paresis; Range of motion; articular; Rehabilitation; Stroke; Upper limbs.

- (1) 請簡單說明此研究的用意及實驗設計為何? (5%)
- (2) 請問作者於此實驗中可能運用哪些研究工具以達其研究目的?這些工具的原理為何? (5%)
- (3) 請問此研究的結果可提供給臨床的治療策略及其所可能運用到的參考架構為何? (10%)

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2. 請閱讀此文章摘要並回答相關問題：

Development of the Hand Active Sensation Test: Reliability and Validity

Petra S. Williams, MS, D. Michele Basso, EdD, Jane Case-Smith, EdD, Deborah S. Nichols-Larsen, PhD

ABSTRACT. Williams PS, Basso M, Case-Smith J, Nichols-Larsen DS. Development of the Hand Active Sensation Test: reliability and validity. Arch Phys Med Rehabil 2006;87:1471-7.

Objective: To develop and establish the reliability and validity of a new quantitative functional measure of haptic perception in the hand, the Hand Active Sensation Test (HASTe).

Design: Reliability was assessed by test-retest sessions. Validity was assessed via discriminant analysis, concurrent validity with 2-point discrimination and wrist position test, and receiver operating characteristic (ROC) curve construction.

Setting: Subject preference.

Participants: Heterogeneous sample of 28 stroke survivors and 28 individually matched controls.

Intervention: Subjects used 1 hand to manipulate HASTe objects that vary by weight or texture to complete 18 match-to-sample trials.

Main Outcome Measures: Two-point discrimination threshold, Wrist Position Sense Test (WPST) average error, and HASTe accuracy score.

Results: Test-retest reliability was strong (intraclass correlation coefficient model 3,1=.77). The HASTe score significantly discriminated the groups ($t=8.3$, $P<.001$) and correlated with 2-point discrimination ($r=-.67$, $P<.001$) and WPST ($r=-.60$, $P<.001$). ROC curve area was .94 for test 1 and .92 for the average of 2 tests.

Conclusions: The HASTe is a reliable and valid functional measure of haptic perception, appears to detect impairment of haptic perception even in stroke survivors with no reported sensory deficits, and may provide valuable quantitative clinical data about complex sensory loss and hand function after stroke.

Key Words: Disability evaluation; Rehabilitation; Reliability and validity; Somatosensory disorders; Stroke.

- (1) 請說明此研究的主旨及實驗設計為何? (5%)
- (2) 請說明作者用何種方法來驗證 HASTe 的 reliability 及 validity? 其驗證的結果又為何? (5%)
- (3) 請問此研究的結果可提供給臨床的建議及價值為何? (10%)