※ 注意：請於試卷內之「非選擇題作答區」作答，並應註明作答之題號。

請閱讀該文獻內容並回答問題 1、2。(摘錄自 **Int J Neurosci. 2015;125(2):100-6.**)

1. 請為此摘要下一個英文與中文標題。(10%)

2. 請將此摘要翻譯成中文。(15%)

Abstract

Flexible and appropriate allocation of attention resources is important during dual-tasking to achieve task goals while maintaining postural safety. This pilot study aimed to examine the influence of explicit prioritization of attention on the dual-task paradigm by employing two levels of difficulty for the postural tasks and reaction time (RT) tasks in healthy young adults. The task entailed standing on a force platform on two feet or on one foot, attending to posture or RT, and completing a simple or choice RT task. Participants verbally responded "top" as soon as the light cue illuminated. In general, attending to RT produced faster RTs ($F(1,19) = 30.9$, $p < 0.001$) and improved center of pressure (COP) Displacement ($F(1,19) = 5.1$, $p < 0.05$) and 95% Area Ellipse ($F(1,19) = 7.1$, $p < 0.05$). These findings suggest that prioritizing attention away from posture may be beneficial for postural performance when completing a second task.

請閱讀該文獻內容並以中文回答問題 3、4。(摘錄自 **Gait Posture. 2009;29(4):634-9.**)

Abstract

The purpose of this study was to compare the efficiency of three different balance training strategies in an effort to understand the mechanisms underlying training-related changes in dual-task balance performance of older adults with balance impairment. Elderly individuals with balance impairment, age 65 and older, were randomly assigned to one of three individualized training programs: single-task (ST) balance training; dual-task training with fixed-priority (FP) instruction; and dual-task training with variable-priority (VP) instruction. Balance control during gait, under practiced and novel conditions, was assessed by calculating the center of mass and ankle joint center inclination angles in the frontal plane. A smaller angle indicated better balance performance. Other outcomes included gait velocity, stride length, verbal reaction time, and rate of response. All measures were collected at baseline and the end of the 4-week training. Results indicated that all training strategies were equally effective ($P>.05$) at improving balance performance (smaller inclination angle) under single-task contexts. However, the VP training strategy was more effective ($P=.04$) in improving both balance and cognitive performance under dual-task conditions than either the ST or the FP training strategies. Improved dual-task processing skills did not transfer to a novel dual-task condition.

Intervention

All participants received 45-min individualized training sessions, three times a week for 4 weeks. Participants were randomly assigned to one of three training groups: (1) single-task balance training; (2) dual-task training with fixed-priority instructions; and (3) dual-task training with variable-priority instructions. Participants in the ST group received 12 balance training sessions under single-task conditions, using a task oriented approach.

見背面

This approach emphasized improving movement strategies within a given environment in order to achieve a desired functional task. Examples of balance tasks included tandem standing, transferring from one chair to another chair, and walking with a reduced base of support. The participants in the FP group practiced the same set of balance tasks as the ST group, while simultaneously performing cognitive tasks. Examples of cognitive tasks included counting backward, naming objects, and spelling words backward. Individuals in this group were instructed to always pay attention to both balance and cognitive tasks. Lastly, the participants in the VP group participated in the same set of activities as the FP group, but under a different instructional set. During each session, half of the training was done with a focus on postural task performance, and half was done with a focus on cognitive task performance.

3. 請問此篇研究的 **fixed-priority (FP) instruction** 與 **variable-priority (VP) instruction**，分別代表什麼意思？(10%)

4. 請問您會如何應用此篇研究發現於訓練老人的平衡能力(需舉例說明)？(15%)

請仔細閱讀下列文獻內容並以中文回答問題 **5-8**。

Influence of Hip Abductor Strength on Functional Outcomes Before and After Total Knee Arthroplasty: Post Hoc Analysis of a Randomized Controlled Trial (摘錄自 Phys Ther. 2017 Sep 1;97(9):896-903.)

Background. Total knee arthroplasty (TKA) is associated with declines in hip abductor (HA) muscle strength; however, a longitudinal analysis demonstrating the influence of TKA on trajectories of HA strength change has not been conducted.

Objective. The purpose of this study was to quantify changes in HA strength from pre-TKA through 3 months post-TKA and to characterize the relationship between HA strength changes and physical performance.

Design. This study is a post hoc analysis of a randomized controlled trial.

Methods. Data from 162 participants (89 women, mean age = 63 y) were used for analysis. Data were collected by masked assessors preoperatively and at 1 and 3 months following surgery. Outcomes included: Timed "Up and Go" test (TUG), Stair Climbing Test (SCT), Six-Minute Walk Test (6MWT), and walking speed. Paired t tests were used for between-and within-limb comparisons of HA strength. Multivariable regression was used to determine contributions of independent variables, HA and knee extensor strength, to the dependent variables of TUG, SCT, 6MWT, and walking speed at each time point.

Results.

Limitations. The post hoc analysis prevents examining all outcomes likely to be influenced by HA strength.

Conclusions. Surgical limb HA strength is impaired prior to TKA, and worsens following surgery. Furthermore, HA strength contributes to performance-based outcomes, supporting the hypothesis that HA strength influences functional recovery.

接次頁

5. 請將上列摘要之 Background、Objective、Design 與 Methods 翻譯成中文。(10%)

6. 請根據 Table 2 所列數據，以中文撰寫本篇摘要之結果(Results)。(15%)

7. 根據 Table 4 所列數據，詳細說明本篇研究的限制。(10%)

8. 請說明如何將本篇研究結果轉譯到臨床應用。(15%)

Table 2.
Change in Involved Limb Normalized Hip Abductor and Knee Extensor Strength and Outcome Measures From Baseline to 1 and 3 Months After Total Knee Arthroplasty[a]

	Mean (95% CI) N	Mean (95% CI) *t*, df, *P* Value	
	Baseline	1-Month Change From Baseline[b]	3-Month Change From Baseline[b]
Involved Limb Normalized Hip Abductor Strength (Kg/kg)	0.113 (0.105 to 0.120) 158	−0.005 (−.011 to .011) −1.50, 663, .13	0.001 (−0.006 to 0 .007) 0.22, 663, .83
Involved Limb Normalized Knee Extensor Strength (N-m/kg)	1.21 (1.13 to 1.29) 162	−0.14 (−0.20 to −0.09) −4.87, 698, <.001	−0.03 (−0 10 to 0.03) −1.06, 696, .30
Timed "Up and Go" (TUG) (s)	8.93 (8.52 to 9.35) 162	−0.56 (−0.91 to −0.21) −3.14, 706, .002	−1.08 (−1.45 to −0.71) −5.72, 696, <.001
Stair Climbing Test (SCT) (s)	16.82 (15.53 to 18.11) 162	−1.58 (−2.74 to −0.42) −2.67, 711, .008	−3.60 (−4.81 to −2.39) −5.85, 693, <.001
Walking Speed (4MWT) (m/s)	1.74 (1.68 to 1.80) 161	−0.02 (−0.07, 0.02) −1.03, 701, .30	0.10 (0.05 to 0.15) 3.99, 692, <.001
6MWT distance (m)	460.26 (444.34 to 476.18) 161	6.24 (−5.87 to 18.34) 1.01, 701, .31	26.20 (13.33 to 39.07) 4.00, 691, <.001

[a] CI = confidence interval, 4MWT = 4-Meter Walking Test; 6MWT = 6-Minute Walk Test.
[b] Conditioned on baseline, sex, site, group, age, and body mass index.

Table 4.
Unique Variance Explained in the Multivariable Regression Models by Full Model, Covariates, Knee Extensor Strength, and Hip Abductor Strength[a]

		Unique Variance (R^2)		
Variable	Full Model[b]	Covariates[c]	Knee Extensor Strength (Quad)[d] (*P* Value)	Hip Abductor Strength (Hip)[e] (*P* Value)
Baseline Timed "Up and Go" (TUG)	.48	.28	.12 (<.001)	.15 (<.001)
1-Month Change in TUG	.15	.10	.03 (.08)	.03 (.12)
3-Month Change in TUG	.64	.63	.02 (.04)	.00 (.84)
Baseline Stair Climbing Test (SCT)	.47	.33	.10 (<.001)	.09 (.002)
1-Month Change in SCT	.24	.20	.02 (.14)	.02 (.35)
3-Month Change in SCT	.82	.80	.01 (.16)	.02 (.98)
Baseline Walking Speed	.47	.32	.07 (.005)	.12 (<.001)
1-Month Change in Walking Speed	.45	.40	.04 (.02)	.02 (.66)
3-Month Change in Walking Speed	.44	.40	.03 (.01)	.01 (.51)
Baseline 6MWT	.50	.31	.09 (.002)	.15 (<.001)
1-Month Change in 6MWT	.49	.44	.02 (.30)	.05 (.02)
3-Month Change in 6MWT	.43	.40	.02 (.12)	.02 (.53)

[a] 4MWT = 4-Meter Walking Test; 6MWT = 6-Minute Walk Test.
[b] Sex, site, group, age, body mass index, quad, hip, baseline (for change at 1 and 3 months).
[c] Sex, site, group, age, body mass index, baseline (for change at 1 and 3 months).
[d] Quad added to sex, site, group, age, body mass index, baseline (for change at 1 and 3 months).
[e] Hip added to sex, site, group, age, body mass index, baseline (for change at 1 and 3 months).

試題隨卷繳回