【第一題，本題佔 35%】

請回答下列問題:

(1)請列出一項兒童動作發展評估工具，說明其適用年紀，並簡要說明其施測項目與施測方法(15%)。

(2)請閱讀以下一篇有關於兒童論文摘要，請以中文 500 字簡述本研究的概況(10%)，請提出此研究的評估工具為何(10%)。

摘要出自：**Kolit Z, Kara K, Sahin S. Effects of Virtual Reality Among Children With Developmental Coordination Disorder: An ICF-Based Randomized Controlled Study. Am J Occup Ther. 2025 Nov 1;79(6):7906205140.**

Importance: Virtual reality (VR) intervention may offer significant benefits in improving motor, cognitive, and sensory-perceptual skills and activity levels among children with developmental coordination disorder (DCD), a condition often affecting daily functioning. **Objective:** To examine the effect of VR intervention on motor, cognitive, and sensory-perceptual skills and activity levels among children with DCD from the International Classification of Functioning, Disability and Health perspective. **Design:** Single-blind randomized controlled trial. **Setting:** University hospital. **Participants:** 48 children, ages 5 to 8 yr. **Intervention:** The study group received VR in addition to COT, and the control group received only COT. In the COT-only program, sensorimotor-based activity approaches were used to provide children with diverse sensorimotor experiences. Both interventions took place 2×/wk for 8 wk, totaling 16 sessions. **Outcomes and measures:** Participants were evaluated using the Test of Gross Motor Development (2nd ed.), Childhood Executive Functioning Inventory, Sensory Integration and Praxis Test, Motor-Free Visual Perception Test (3rd ed.), and Functional Independence Measure for Children. **Results:** The study group showed statistically significant improvements in motor, cognitive, sensory-perceptual skills, and activity levels ($p < .05$). The control group showed significant improvements in only sensory-perceptual skills and activity levels ($p < .05$), with no significant differences in motor and cognitive skills ($p > .05$). The study group showed stronger effects across all measured areas ($d > 0.8$). **Conclusions and relevance:** Adding VR to COT was more effective than COT alone in enhancing motor, cognitive, and sensory-perceptual skills and activity levels. These results highlight the potential of VR in pediatric rehabilitation to improve therapeutic outcomes. Plain-Language Summary: This study examined whether the use of virtual reality combined with conventional occupational therapy could improve motor, cognitive, and sensory-perceptual skills and activity levels in children with developmental coordination disorder. A total of 48 children, ages 5 to 8, were randomly assigned to two groups: one received both conventional occupational therapy and virtual reality therapy, and the other received only conventional occupational therapy. The children were tested before and after the intervention on motor skills, cognitive abilities, sensory processing, visual perception, and daily activities. Results showed significant improvements in motor, cognitive, sensory, and visual skills in the virtual reality and conventional occupational therapy group, with larger effects observed. These findings suggest that virtual reality could be a valuable addition to therapeutic programs for children with developmental coordination disorder and help them achieve better outcomes. Furthermore, it suggests that integrating virtual reality into conventional occupational therapy programs could provide therapists with a valuable tool to enhance treatment outcomes.

【第二題，本題佔 30%】

以下為 Inamdar K, Dusing SC, Thacker LR, Pidcoe PE, Finucane S, Manning J, Chu VW, 等人發表於 Pediatric Physical Therapy 2025;37:456–4.6 的原始論文 **Tummy Time Tracking: Concurrent-Validity of Wearable Sensors in Home Settings for Term and Preterm Infants** 之著作摘要,請以中文回答以下問題:

(1) 請問本研究的目的為何(5%)?

(2) 請問本研究主要探討的兩項評估工具為何(5%)?該評估工具的設計原理為何(5%)?

(3) 請問本研究用來當作黃金標準的評估工具為何(2%)?並請說明使用該工具可能設備和實驗流程(3%)

(4) 請簡述本研究的結果(3%),並闡明此項結果對於兒童發展臨床服務的意義(3%)與限制為何(4%)?

見背面

Purpose: To assess the concurrent validity of 2 wearable sensors, GENEActiv (GA) and MonBaby (MB), for tracking tummy time in full-term and preterm infants at home. **Methods:** Nineteen full-term infants and 13 infants born preterm, aged 3 to 6 months, wore GA and MB sensors during caregiver video-recorded active play at home over 3 days. Prone (tummy time) durations detected by each sensor were compared to video for validation. **Results:** Both GA and MB sensors demonstrated excellent ($\kappa = 0.86$) and substantial ($\kappa = 0.78$) second-by-second agreement with video, respectively, for tracking tummy time. For cumulative tummy time, the GA showed higher accuracy with video (GA =60 minutes, video =58 minutes, difference =2 minutes) compared to MB (MB =43 minutes, video =47 minutes, difference =4 minutes). No differences in accuracy were found between the 2 sensors. **Conclusion:** Wearable sensors can accurately track tummy time at home and can support adherence to movement guidelines in infants. Establishing caregiver feasibility is crucial for broader use.

【第三題，本題佔 35%】

以下為一篇比較「以家庭為中心介入(family-centered intervention)」與「物理治療師主導介入(therapist-directed intervention)」之隨機對照試驗研究摘要。請根據研究設計與實證物理治療的觀點，進行批判性分析與改進建議。

請回答下列三題（請具體說明，避免僅列舉名詞）：

(1) 從介入理論與實證研究角度，說明本研究所採用之介入模式（家庭為中心或治療師主導）至少一項主要優勢與一項重要限制，並說明其對研究結果解釋可能造成的影響(12%)。

(2) 針對上述限制，提出具體且可行的改進策略（例如研究設計、介入內容、結果指標或統計分析等）(12%)。

(3) 請選擇摘要中的一個段落（目的／方法／結果／結論），示範性改寫該段內容，將你在第 2 題所提出的改進「實質納入」研究設計或結果描述中（可使用中文或英文作答）(11%)。

Title

Comparing Family-Centered and Therapist-Directed Physical Therapy Interventions for Preschool Children With Developmental Delay: A Randomized Controlled Trial

Abstract

Background:

Family-centered intervention has been increasingly emphasized in early childhood physical therapy; however, its comparative effectiveness relative to traditional therapist-directed intervention remains unclear.

Objective:

To compare the effects of a family-centered, routines-based physical therapy intervention with a traditional therapist-directed clinic-based intervention on gross motor function and family outcomes in preschool children with developmental delay.

Methods:

Forty-eight children aged 2–5 years with developmental delay were randomly assigned to either a **therapist-directed intervention group** (TD group) or a **family-centered intervention group** (FC group). Both groups received a 12-week intervention with equivalent total therapy time.

The TD group received twice-weekly clinic-based physical therapy focused on direct motor skill training. The FC group received weekly coaching sessions in which physical therapists collaborated with caregivers to embed motor strategies into daily routines. Primary outcomes included gross motor function measured by a standardized motor assessment. Secondary outcomes included caregiver self-efficacy and child participation in daily activities.

Results:

Both groups demonstrated significant improvements in gross motor function after the intervention period ($p < .05$), with no significant between-group difference. However, the FC group showed significantly greater improvements in caregiver self-efficacy and child participation compared with the TD group ($p < .01$).

接次頁

Conclusion:

While both intervention approaches were effective in improving gross motor outcomes, family-centered intervention provided additional benefits at the family and participation levels. These findings support the use of family-centered practices in early childhood physical therapy.

試題隨卷繳回