

- 1) Please read the following paragraphs adapted from the article "What's new in the use of MRI in the orthopaedic trauma patient?" by Karantanas A.H. in *Injury*. 2014 Jan 19. And answer questions 1-2. (20%)

Stress injuries

Stress injuries cover a wide spectrum of findings ranging from stress reaction which represents a pre-fracture condition limited to the trabecular bone, to a complete fracture involving the cortex. Plain films may miss up to 50% of stress induced injuries, even if they are taken 2-3 weeks following the onset of symptoms. Stress injuries are classified as the fatigue ones resulting from increased and abnormal loading on normal bones and the insufficiency ones resulting from normal loading on abnormal bone. Quite often the pathophysiologic mechanism shares both mechanisms, i.e. elite female athletes suffering from hormonal disturbances and anorexia or middle aged male and elderly female athletes with osteopenia or osteoporosis. Stress fractures around pelvis are increasingly recognised in athletes, even from the preadolescent age. The main contribution of MRI is the prompt recognition of the stress reaction which enables early treatment before a fatigue fracture occurs. MRI is highly accurate in diagnosing insufficiency fractures of the pelvis following minor trauma, resulting from osteoporosis, post radiation osteitis, Paget's disease and rheumatoid arthritis. Stress fractures are demonstrated as low signal intensity irregular lines on all pulse sequences surrounded by high signal intensity bone marrow oedema on fluid sensitive sequences. The proper sequences for assessing the stress induced injuries include a large field of view STIR and a focused/high resolution fat suppressed PD or T2-w.

Fractures

Most pelvic and long and small bones fractures are adequately diagnosed on plain films. Computer Tomography (CT) is the method of choice for acetabular fractures or long bones and calcaneal fractures with intra-articular extension and associated intra-articular loose bodies. Traumatic injuries of the pelvis result from high energy trauma and CT enables prompt assessment of associated visceral injuries, i.e. vascular tears. In a recent study, MRI showed higher sensitivity than CT in detecting acute sacral fractures. In the absence of an osseous fracture, MRI may depict other associated soft tissue injuries which may explain the clinical symptoms.

1. Please translate the first five sentences in stress injuries section (underlined content) explaining what stress fracture is. (10%)

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2. Please read the fractures section and explain why CT is “the method of choice” for pelvic fractures and what does MRI do better than CT. (10%)
- 2) Please read the following paragraphs adapted from the article “Home-Based Multidisciplinary Rehabilitation following Hip Fracture Surgery: What Is the Evidence?” by Donohue K. et.al. in *Rehabil Res Pract*. Epub 2013 Dec 17. And answer questions 3-4. (20%)

Hip fracture is common across all age groups but is more common in older adults. Most hip fractures are treated surgically. Hip fractures place tremendous burden on health care systems. Individuals with hip fractures have increased mortality, long-term disability, and functional dependence since most older adults do not attain pre-injury functional levels. Moreover, impairment in quality of life (QOL), psychological and social domains, and fall related efficacy are also reported following a hip fracture. Specific interventions have been designed to reduce the impact of hip fracture on these domains. The components of an intervention depend on targeted outcome.

Individuals with hip fracture consider increase in mobility and functions to be the preferred outcomes when asked about their recovery expectations following hip fracture. Postsurgical rehabilitation programs aim to reduce disability and improve mobility, functions, balance, strength and QOL following hip fracture. They are implemented in variety of settings such as inpatient, outpatient, or home-based rehabilitation. Post hip fracture rehabilitation may involve multidisciplinary care, which includes services provided by multiple health disciplines such as physiotherapy (PT), occupational therapy (OT), nursing, social work, and dietetics under the supervision of a geriatrician or rehabilitation physician. Previous systematic reviews have indicated that multidisciplinary rehabilitation leads to superior outcomes in individuals following hip fracture surgery.

While there is evidence to believe that multidisciplinary rehabilitation is effective in individuals following hip fracture surgery, whether the recovery patterns differ depending on the setting (inpatient, outpatient, or home) in which it is provided is yet to be determined. Literature thus far has largely focused on examining the benefits of multidisciplinary rehabilitation rather than specifically investigating the influence of treatment setting in which such rehabilitation is delivered.

Home-based rehabilitation presents a viable option compared to rehabilitation services delivered in inpatient or outpatient rehabilitation setting. Home-based rehabilitation typically occurs when a patient is discharged from an inpatient setting (acute care or subacute rehabilitation) and receives further rehabilitation at home to maintain continuum of care. Home-based rehabilitation programs facilitate early discharge from hospital, thereby reducing the financial burden associated with hip fractures. They are also safe and efficient in managing individuals following hip fractures. Some of the previous studies have demonstrated that home-based rehabilitation improves physical function, health related quality of life (HRQOL), and balance confidence. However, these studies largely incorporate only PT services where the intervention is not multidisciplinary in nature. With distinct advantages of managing individuals in their home setting, it is important to examine the benefits of multidisciplinary home rehabilitation (MHR). In particular, a comprehensive review of literature to assess the effect of MHR on functions, mobility, balance, and HRQOL can facilitate understanding of appropriate discharge setting following hip fracture surgery.

3. Please translate the second paragraph to explain what "Multidisciplinary Rehabilitation" is. (10%)
4. After reading these paragraphs, please point out the key factors why does the author think Home-Based Rehab is important? (10%)

3) Please read the following paragraphs adapted from the article "The development of open access journal publishing from 1993 to 2009." by Laakso M, Welling P, Bukvova H, et al., in PLoS One. 2011;6(6):e20961., and answer questions 5-7.(30%)

Like many other industries involved in content delivery, scientific publishing has seen new challenges and opportunities with the wide adoption of the Internet. In the early days of the Web, before the 1990s, electronic mailing lists were a popular method for distributing longer strings of text, like journal articles, to groups of people. Since then, technology and web standards have rapidly progressed and matured. Journal articles are now with increasing frequency being both offered and retrieved in digital formats online rather than through physical, printed volumes. Most well-established journals have added digital publishing as a complementary service to their paper editions.

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Now that the Internet has enabled low-cost distribution of digital content, the access restrictions put in place to protect and monetize said content have been a topic for active discussion, not least with regard to research results produced with public funding. The costs involved in providing an online-only journal are noticeably different from those of printing and shipping physical journal volumes, with the major online-only cost posts being copy-editing, web hosting, and the maintenance of a functioning mechanism for peer-review. For a comprehensive review of economic implications of alternative publishing models see. When paper issues were the only available option, a wide enough subscriber base was a condition for sustainability of a journal. Open Access business models have been introduced in parallel to traditional subscription-based models; a journal might charge authors for submissions or rely on advertising revenue as a source of income. Additionally, Open Access journals are not only unique because of their paperless operation, but because they offer new possibilities for niche- and emerging subject areas to establish dedicated research outlets.

In summary digital content delivery has, within a relatively short time-span, shifted the landscape of scientific publishing considerably and opened up the market for alternative ways of distributing scientific literature. At the same time as the process of finding, acquiring, and consuming scholarly content has been revolutionized by technology, the access restrictions to scientific literature have been scrutinized with different arguments and perspectives. Open Access is a new technology-enabled business model, which is gaining increasing acceptance.

Gold Open Access is a form of OA where the document is made available by the publisher to whom the document has been submitted. It has been suggested that 8.5% of all scholarly journal volume for 2008 is available through some form of Gold OA. Gold OA means that the content of the actual journal publishing the article is, either totally or to some extent, freely accessible to the public. The Gold OA category covers a diverse spectrum of publications, including everything from small journals publishing a handful of articles annually to big journals publishing hundreds of articles in the same time frame. The Gold OA category can be further subdivided based on the degree or extent of journal content availability. Direct OA is when the whole journal is published Open Access without any limitations, and is estimated to account for 62% of all Gold OA. Other journals keep the most recent content accessible only to paying subscribers, but as time passes, the embargo is lifted and the content is made available to all. This variant is called Delayed OA, and constituted 14% of all Gold OA. Sometimes an author or the author's institution can pay for an article to be made freely available in an otherwise subscription-based journal. This is referred to as Hybrid OA, and made up 24% of all Gold OA.

以中文說明：

5. Open access 的意義、精神及重要性 (10%)
6. Gold open access 的定義 (10%)
7. Direct OA 及 Delayed OA 的不同 (10%)

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4) 請閱讀以下論文摘要並回答問題。(摘錄自 Dev Med Child Neurol 2011;53:621-9) (30%)

8. 請為此摘要下一個英文與中文標題。(10%)

9. 請將此摘要改寫成中文。限 700 字以內(含標點符號)，請勿直接翻譯，評估量表名稱可維持使用英文。(20%)

AIM This study evaluated the efficacy of a child-focused versus context-focused intervention in improving performance of functional tasks and mobility in young children with cerebral palsy. **METHOD** A randomized controlled trial cluster research design enrolled 128 children (49 females, 79 males; age range 12mo to 5y 11mo; mean age 3y 6mo, SD -1y 5mo) who were diagnosed with cerebral palsy. Children across levels I to V on the Gross Motor Classification System (GMFCS) were included in the study. Children were excluded if there were planned surgical or medication changes during the intervention period. Therapists from 19 children's rehabilitation centers were block randomized (by occupational therapist or physical therapist) to a treatment arm. Children from consenting families followed their therapists into their assigned group. Children received child-focused (n=71) or context-focused intervention (n=57) over 6 months, returning to their regular therapy schedule and approach between 6 and 9 months. The primary outcome measure was the Pediatric Evaluation of Disability Inventory (PEDI). Secondary outcome measures included the Gross Motor Function Measure (GMFM-66), range of motion of hip abduction, popliteal angle and ankle dorsiflexion, the Assessment of Preschool Children's Participation (APCP), and the Family Empowerment Scale (FES). Outcome evaluators were masked to group assignment and completed assessments at baseline, 6 months, and 9 months. **RESULTS** Ten children did not complete the full intervention, six in the child group and four in context group. GMFCS levels for children in the study were level I (n=37), level II (n=23), level III (n=21), level IV (n=21), and level V (n=26). There were no significant differences at baseline between the treatment groups for GMFCS level, parental education, or parental income. For the PEDI, there was no significant difference between the treatment groups, except for a small effect ($p < 0.03$) on the Caregiver Assistance Mobility subscale between baseline and 9 months. The mean scores of both groups changed significantly on the Functional Skills Scales ($p < 0.001$) and Caregiver Assistance Scales ($p < 0.02$) of the PEDI after the 6-month intervention. There was no additional statistically significant change on the PEDI during the follow-up period from 6 to 9 months. A subgroup effect was found for age ($p < 0.001$), with children younger than 3 years changing significantly more than older children. GMFCS level at baseline did not influence the

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amount of change on the PEDI scales. There were no significant differences between the treatment groups on the GMFM, range of motion measures, APCP or FES assessments. For the GMFM, there was a significant change over time from baseline to 6 months ($p < 0.001$) and no significant change between 6 and 9 months. There was no adverse side effect as range of motion did not decrease in either group. Hip abduction increased significantly ($p < 0.01$) at the 9-month assessment for both groups. For the APCP, significant changes for both treatment groups were found between baseline and 6 months for play intensity ($p < 0.04$), physical activity intensity and diversity ($p < 0.001$), and total score intensity ($p < 0.01$). **INTERPRETATION** This study shows that child- or context-focused therapy approaches are equally effective and that frequency of intervention may be a critical component of successful intervention. Further evaluation is required to identify the various 'dose-response' relations of amount of treatment and changes in functional abilities.



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