Please read the following paragraphs adapted from the article "*Lost in Knowledge Translation: Time for a Map?*" by Graham ID, Logan J, Harrison MB, et al. in *J Contin Educ Health Prof* 2006;26:13-24, and answer questions 1-4.

1. 請說明作者為何不用" *Knowledge to practice*"這個名稱。(10 分)
2. 請以中文說明" *Knowledge translation*"的定義。(10 分)
3. 請以中文說明" *knowledge transfer*"的定義。(10 分)
4. 請以中文敘述" *Knowledge to action process*"。(20 分)

Although it has been ongoing since the early quality assurance work of Donabedian in the 1960s, the growing awareness that research findings are not making their way into practice in a timely fashion, coupled with the current emphasis on evidence-based, cost-effective, and accountable health care, has stimulated increased interest in finding ways to minimize what might be described as the knowledge-to-action (KTA) gap. We have elected to use the term *action* because it is more generic than *practice* and encompasses the use of knowledge by practitioners, policymakers, patients, and the public. Of particular concern to us is the misuse of the terms that in some settings has led to their status as buzz words and the lack of clarity about the concepts and components involved in the KTA process.

Knowledge translation (KT) is the one gaining prominence in Canada. The Canadian Institutes of Health Research (CIHR) defined the term in 2000. Based on the CIHR's definition, the US National Center for the Dissemination of Disability Research (NCDDR) subsequently produced its own definition of the term. What is key in the CIHR and NCDDR definitions is that the primary purpose of KT is to address the gap between what is known from research and knowledge synthesis and implementation of this knowledge by key stakeholders with the intention of improving health outcomes and efficiencies of the health care system. Implicit in what is meant by *knowledge* is primarily scientific research, as made clear by the CIHR clarification that the interactions are between *researchers* and users and researchers tend to only produce research or science. Another important element of this definition is the acknowledgement that the KT process occurs in a complex social system of interactions among stakeholders. Unfortunately, the CIHR definition is not explicit about what is meant by interactions that can range from simple communication to exchange of knowledge; however, the NCDDR definition is clear that the interaction is collaborative and two way.

The term *knowledge transfer* is probably the one most commonly used and is also used infields outside of health care. Knowledge transfer is used to mean the process of getting knowledge used by stakeholders. Knowledge usually encompasses all forms of knowing (research as well as other ways of knowing). This term has sometimes been interpreted as, and criticized for, suggesting that the process is unidirectional, from knowledge producers to stakeholders. However, many using the term consider knowledge transfer a two-way

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process, although this is not always made explicit. The definitions from the UK Particle Physics and Astronomy Research Council and the UK Office of Science and Technology reveal that some users of the *Graham et al.* term do see the complexity of the KTA process and consider transfer between all the stakeholders as critical. Another concern sometimes heard about this term is that *transfer* has been interpreted to mean simply the first step of disseminating knowledge or information to stakeholders and does not extend to the use of the knowledge (i.e., putting it into action).

For conceptual and illustrative purposes, we have divided the KTA process into two concepts: knowledge creation and action, with each concept comprised of ideal phases or categories (Figure 1). In reality, the process is complex and dynamic, and the boundaries between these two concepts and their ideal phases are fluid and permeable. The action phases may occur sequentially or simultaneously, and the knowledge phases may influence the action phases. Figure 1 presents our conceptualization of the KTA process. The funnel symbolizes knowledge creation, and the cycle represents the activities and processes related to use or application of knowledge (action). With our conceptualization, knowledge is empirically derived (i.e., research based) but also encompasses other forms of knowing such as experiential knowledge as well.

Lost in Knowledge Translation

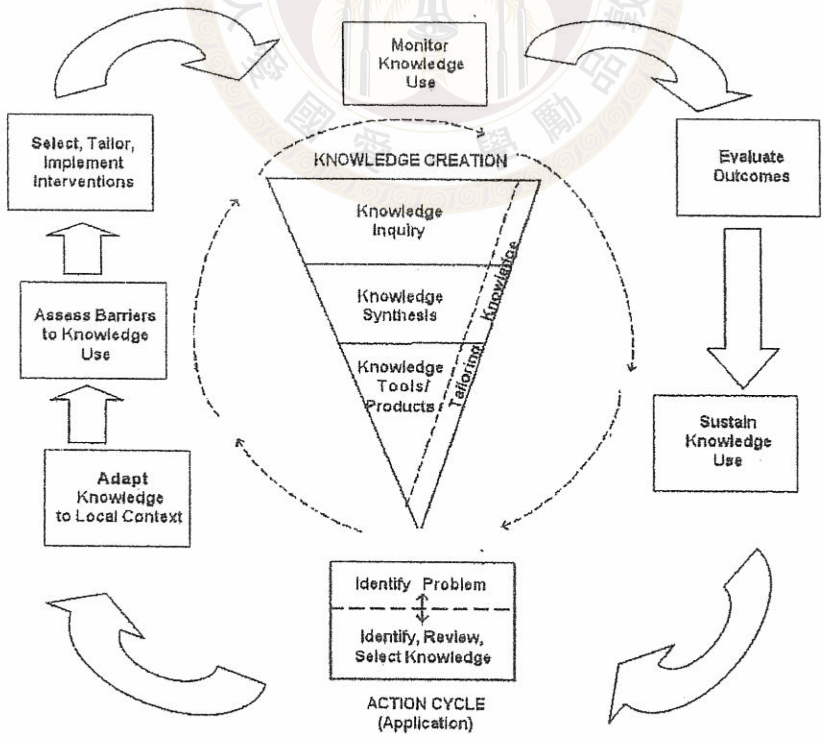

Figure 1 Knowledge to action process

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Please read the following paragraphs adapted from an article by William L. Jungers in Nature 463, 433-434 (27 January 2010), and answer questions 5-6.

5. 請以英文為此文章下一個標題。 (10 分)

6. 請根據此文章的敘述，以中文說明 fore-foot striking runner 的特色為何 (15 分)?

A commitment to walking and running on two legs distinguishes humans from apes, and has long been the defining adaptation of the hominins-the lineages that include both humans and our extinct relatives. This form of locomotion (bipedalism) has been around for millions of years, and we have been unshod for more than 99% of that time. The uniquely specialized anatomy of the human foot is thus a product of barefoot bipedalism, which is still the norm in parts of the world. Lieberman and colleagues' biomechanical research on the subject, therefore has implications for interpreting human evolution. It also has some potentially useful and thought-provoking implications for sports medicine and running-shoe design.

Most shod runners today make initial contact with the ground heel-first (rear-foot striking, or RFS). Experienced barefoot runners, like the ones observed for this study, land on the ground in many ways depending on the conditions-sometimes RFS, but more often avoiding landing heel-first because it hurts owing to repetitive, high-impact forces (or transients). A more anterior landing on a flat foot (mid-foot striking, or MFS), or on the lateral ball of the foot (fore-foot striking, or FFS), has predictable, and some would say desirable, consequences for pedal biomechanics. In FFS and some MFS, the foot's centre of pressure necessarily starts more anterior at contact and then moves backward briefly before moving forward again for toeing-off. Among other differences, FFS barefoot runners tend to take shorter strides and to run with greater vertical leg and ankle compliance (the lowering of the body's centre of mass relative to the force of the impact). This serves to blunt the transient force and results in a less jarring, 'smoother ride'. The elevated and cushioned heel of most modern running shoes is designed for comfort, stability and to attenuate the transient forces of heel-strike in RFS running that may be linked to some orthopaedic injuries.

Lieberman and colleagues' multifaceted study corroborates and extends what is known about the basic mechanics of barefoot running, as they develop a collisional model of the foot and leg as an 'L-shaped double pendulum' with the same dimensions as a typical shank and foot. They then calculate how much energy such a pendulum exchanges with the ground when it collides at different points and with a stiff or compliant ankle. They also broaden the comparative human database by studying the phenomenon not only in long-term, habitual barefoot runners in a laboratory setting but also on the runners' home turf in Africa. They find that FFS (and some MFS) reduces the effective mass of the foot and converts some translational energy into rotational energy; the calf muscles control heel drop, and the FFS runner can take fuller advantage of elastic energy storage in both the Achilles tendon and the longitudinal arch of the foot. FFS and MFS runners therefore require more calf- and foot-muscle strength, but avoid uncomfortable and potentially injurious impact transients even when barefoot on very hard surfaces.

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Please read the following abstract adapted from an article by Vogler et al. *Arch Phys Med Rehabil.* 2009;90(8): 1317-1324, and answer questions 7-8.

7. 請以英文為此摘要下一個標題。 (5 分)

8. 請將此英文摘要翻譯成中文 (20 分)?

OBJECTIVE: To compare the efficacy of seated exercises and weight-bearing (WB) exercises with social visits on fall risk factors in older people recently discharged from hospital. DESIGN: Twelve-week randomized, controlled trial. SETTING: Home-based exercises. PARTICIPANTS: Subjects (N=180) aged 65 and older, recently discharged from hospital. INTERVENTIONS: Seated exercises (n=60), WB exercises (n=60), and social visits (n=60). MAIN OUTCOME MEASURES: Primary outcome factors were Physiological Profile Assessment (PPA) fall risk score, and balance while standing (Coordinated Stability and Maximal Balance Range tests). Secondary outcomes included the component parts of the PPA and other physical and psychosocial measures. RESULTS: Subjects were tested at baseline and at completion of the intervention period. After 12 weeks of interventions, subjects in the WB exercise group had significantly better performance than the social visit group on the following: PPA score (P=.048), Coordinated Stability (P<.001), Maximal Balance Range (P=.019); body sway on floor with eyes closed (P=.017); and finger-press reaction time (P=.007) tests. The seated exercise group performed better than the social visit group in PPA score (P=.019) but for no other outcome factor. The seated exercise group had the highest rate of musculoskeletal soreness. CONCLUSIONS: In older people recently discharged from the hospital, both exercise programs reduced fall risk score in older people. The WB exercises led to additional beneficial impacts for controlled leaning, reaction time, and caused less musculoskeletal soreness than the seated exercises.

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