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Answering Global Health Needs in Low-Income Countries: Considering the Role of Physical Therapists

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In the changing landscape of global health, new challenges continuously emerge and new ways of addressing them are needed. There are huge discrepancies between health care services in high- and low-income countries, and those countries' ability to deal with these health challenges. Physical inactivity is recognized as a growing and serious problem for global health. Physical therapy—an allied health profession primarily interested in function and movement of the human body—is well-established and -recognized in most high-income countries. In low- and middle-income countries, however, physical therapists are either severely limited in numbers and inaccessible to most, or services are established largely outside of national health systems. Yet in these countries, physical therapists can have a major role to play from promotion and prevention to habilitation and rehabilitation. Using physical activity as its underpinning approach, there are clear gaps to fill within the spheres of non-communicable disease, maternal and child health, aging populations, HIV/AIDS, musculoskeletal disorders and injuries, and mental health, to name a few. Thus in this discussion paper we propose that, as a component of collaborative interdisciplinary care and with contextually adapted and locally rooted services, physical therapy is an important health profession for health systems in low-income countries.

KEY WORDS: physical therapy, physical activity, global health

Introduction

The health of the world's population is changing. Across the globe, technological developments, socioeconomic changes, and environmental- and man-made catastrophes are impacting the state of peoples' health. The landmark Global Burden of Disease 2010 report has shown that people are living longer, but with more health issues and disabilities (Horton, 2012). In spite of progress, there remains a huge discrepancy between high- and low-income countries. Populations in low-income countries are particularly vulnerable, with less developed medical- and health-care systems and poor access to relevant health services; higher levels of poverty; and in some countries, recurring and devastating natural and man-made disasters which the countries are ill-equipped to deal with. As Dwyer (2005)

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asks: "[w]hat are we to make of a world with such unequal health prospects? What does justice demand in terms of global health?" (p. 460).

These inequalities and needs shape the aims of this paper, addressed from our perspective as physical therapists who have lived and worked in low-income countries supporting physical therapy in response to local needs. This paper has grown out of a desire to better understand what we as physical therapists can offer in terms of improving health of populations in low-income countries. It is born out of significant recent developments within the global health community which place greater importance on addressing a broader range of health issues than have historically been emphasized. It is also underpinned by moral convictions about doing what we can to support people at all stages of health needs. Thus, we will look at the role physical therapists can play in supporting and promoting healthier populations in countries where health services are not as accessible or as developed as in other parts of the world.

Health, Physical Activity, and Physical Therapy

In this paper, we will use the World Health Organization's definition of health: "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO, 1948). Although this definition was established as long ago as 1948, it still holds. However, views about what is needed for promoting and maintaining health constantly change, as we gain greater knowledge and understanding both about body structure and function, and the impact of environmental factors on functioning. The matter of promoting health is complex and there are many different determinants to consider, such as health behavior (Glanz, Rimer, & Viswanath, 2008), social determinants (Wilkinson & Marmot, 2003), cultural factors (MacLachlan, 2006), gender (Rieker & Bird, 2005), urbanization (Moore, Gould, & Keary, 2003), socioeconomic status (Adler & Newman, 2002), climate change (Patz, Campbell-Lendrum, Holloway, & Foley, 2005), natural disasters (Brennan & Waldman, 2006), and wars (Levy & Sidel, 2008). These intertwine, cross over, and impact each other. And irrespective of age, personal behavior, social or economic status, or environmental conditions, physical activity is essential for health (Bouchard, Blair, & Haskell, 2012; Sundberg, Jansson, Edling, & Wadman, 2010; WHO, 2010b). The opposite, physical inactivity, is an increasing and serious problem for global health, now considered to be pandemic (Kohl et al., 2012). Physical inactivity is a complex problem that will require collaborative action on many different levels. The health profession most commonly associated with physical activity and physical function to promote and maintain health is physical therapy (World Confederation for Physical Therapy [WCPT], 2011).

Physical therapists—also called physiotherapists—are proposed as key players in answering healthcare needs of the 21st century (Dean, 2009a). Physical therapy is primarily interested in function and movement of the human body, and physical activity is central to physical therapy practice. Physical therapists use physical activity as a means to restore function, and they use other methods

and modalities to restore function in order to enable physical activity. Physical therapy is thus described as follows:

> Physical therapy provides services to individuals and populations to develop, maintain and restore maximum movement and functional ability throughout the lifespan. This includes providing services in circumstances where movement and function are threatened by ageing, injury, diseases, disorders, conditions or environmental factors. **Functional movement is central to what it means to be healthy.** Physical therapy is concerned with identifying and maximizing quality of life and movement potential within the spheres of promotion, prevention, treatment/intervention, habilitation and rehabilitation. This encompasses physical, psychological, emotional, and social wellbeing. Physical therapy involves the interaction between the physical therapist, patients/clients, other health professionals, families, care givers, and communities in a process where movement potential is assessed and goals are agreed upon, using knowledge and skills unique to physical therapists. (WCPT, 2011, p. 1, bold font added)

Physical therapists work across a broad range of settings, from hospitals to community based programs, and from schools to workplaces and companies. They are involved through a full life course from birth to older age and across a spectrum of health conditions and impairments (WCPT, 2011). The profession is essential for rehabilitation, prevention, health promotion, and acute care, and as such, is an important profession in health care systems (Higgs, Refshauge, & Ellis, 2001). It is practiced in a broad range of countries, with 107 countries having national association membership of the WCPT (2013). United by base similarities and a common definition and aim of practice, local variations and traditions in different countries and regions affect the practice and development of the profession (Higgs et al., 2001). The physiotherapy profession is at different stages of development in different countries, and the development processes of education and practice have also taken different paths in different countries, affected by local conditions, cultures, and contexts. Distinctions can be seen between high-income and low-income countries.

Almost 20 years ago, the importance of physical therapists was recognized for rehabilitation services in low-income (so-called developing) countries (Kay, Kilonzo, & Harris, 1994). More recently, physical therapists have been acknowledged as having key skills and competencies to contribute to global health developments and initiatives (Alappat et al., 2007), and over the past decades, the physical therapy profession has begun to expand in low-income countries. However, compared to high-income countries, and compared to other health services in low-income nations, physical therapy (or any health-related rehabilitation service) is still extremely limited, both when it comes to being part of national health and/or social structures (Gupta, Castillo-Laborde, & Landry, 2011) and in terms of being an integral part of international medical aid

organizations. An important factor related to this is the lack of national physical therapists as well as physical therapy schools and educational programs. These factors—the positions available for physical therapists and the availability of physical therapists—entail a "catch 22" scenario. An increase in demand could help stimulate the further development of educational programs, which would then increase the number of physical therapists. There are naturally several complex factors to consider with regards to this, but one key point is that in order to increase the demand for physical therapists we must increase awareness about what physical therapists can do to meet the global health needs.

Thus there is a need to further explore the role of physical therapists, particularly in low-income countries, in light of emerging and evolving global health trends and inequalities. Based on the role of physical therapy in settings where the profession has been well established, we will consider the role it is beginning to play, and should continue to play, in less resourced contexts.

Physical Therapists' Role in Responding to Health Needs in Low-Income Countries

In this discussion paper, we will focus on the role of physical therapists in addressing a number of significant health needs in low-income countries: non-communicable diseases, musculoskeletal conditions, an aging population, maternal and child health, disability, and HIV/AIDS. This list is not exhaustive—there are other areas of current and potential intervention for physical therapy—nor is it an in-depth analysis of the situation, but it can serve as an initial guide for key global health concerns where physical therapy has a major role to play.

Noncommunicable Diseases

Noncommunicable diseases (NCDs) are conditions that cannot be transferred directly from one person to another; often, they are related to lifestyle. These conditions are a growing concern not only in high-income countries, but increasingly also in low- and middle-income countries (Alwan and MacLean, 2009; Aspray et al., 2000; Dans et al., 2011): in 2008, 80 percent of NCDs were found in low- and middle-income countries (WHO, 2012c). NCDs are responsible for 60 percent of all deaths globally (NCD Alliance, 2013) and are thought to account for as much as 78.6 percent of all years lived with a disability (Vos et al., 2012). Becoming only the second health issue ever to warrant a UN High Level Meeting, NCDs have become synonymous with their four biggest killers—cardiovascular diseases, respiratory illnesses, diabetes, and cancers. Ischaemic heart disease is the leading cause of death, and more than 84 percent are found in low- and middle-income countries (WHO, 2009). NCDs are not limited to the "big four," however, and mental health conditions, musculoskeletal conditions, and neurological and congenital disorders are all included under this banner. To address NCDs, the global health community has put heavy emphasis on prevention—targeting the four main risk factors: tobacco, alcohol, diet, and

physical inactivity. As a concerning risk factor for noncommunicable diseases (Lee et al., 2012) and as a global public health priority (Kohl et al., 2012), we will here consider physical inactivity, or rather, physical *activity* as a means of preventing NCDs.

There is compelling evidence for the need for physical activity in relation to NCDs, and physical activity and exercise are needed for both promotion of health and prevention of disease (Sundberg et al., 2010). In terms of physical therapy, Dean (2009a, 2009b) has undertaken a rigorous exploration of current recommendations for a number of life style-related conditions and physical therapists' role in relation to these. The conditions include ischemic heart disease, cancer, hypertension and stroke, obesity, diabetes and metabolic syndrome, musculoskeletal health, and psychosocial health. Overall, the recurring and often central approach to both prevention and intervention is physical activity and exercise, where physical therapists have a key role to play:

> Physical therapy is "the fifth largest established health profession, … [and] the quintessential nonpharmacological and nonsurgical (noninvasive) profession. Such interventions have been shown unequivocally to underpin health promotion and the prevention of chronic lifestyle-related conditions and their management." (Dean et al., 2011, p. 11)

Physical therapists are well equipped to promote physical activity as part of both prevention of and intervention in NCDs. Furthermore, since many NCDs are directly linked to lifestyle and behavior, interventions must also address behavioral change (Dean, 2009b). For example, behavior change techniques are recommended for interventions aiming at promoting healthy eating habits and physical activity (Michie, Abraham, Whittington, & McAteer, 2009). Since behavior is linked to context and culture, physical therapists must also consider this when working with behavioral change in relation to lifestyle-related conditions (Dean, 2009a).

Musculoskeletal Disorders

Musculoskeletal pain is a common disorder amongst patients seeking primary health care. In Europe patients with chronic musculoskeletal disorders comprise a large group (19 percent) whereby these disoders are a major health problem (Breivik, Collett, Ventafridda, Cohen, & Gallacher, 2006). But this is not only the case in Europe. For example, in the physical therapy clinics of a large rehabilitation program in Afghanistan the most common complaint was back pain, followed by "arthritis, 'other' conditions, cervical problems, cerebral palsy (CP), spinal cord injury (SCI), polio and hemiplegia" (Wickford, Hultberg, & Rosberg, 2008, p. 307). These are all conditions for which physical therapists should be primary actors in interventions and services. Specifically, low back pain (LBP) merits particular mention: it is the most common musculoskeletal complaint, a leading cause of disability, and a challenging issue for medical and

health care structures with implications on individual, social, and economic levels. Although much research on the prevalence and burden of LBP is from Western nations, it is a global problem. As mentioned, LBP was the most common condition seen by Afghan physical therapists, and in Africa, the prevalence of LBP has been found to be comparable to Western nations (Louw, Morris, & Grimmer-Somers, 2007). On a global level, LBP is (and has been consistently) the highest disorder for global years lived with a disability, increasing by 43 percent since 1990 (Vos et al., 2012). Of further relevance, neck pain is fourth on the list of disorders, with other musculoskeletal disorders listed as number six. Musculoskeletal disorders clearly comprise a considerable health issue that requires continued and rigorous attention.

The physical therapy interventions of therapeutic exercise and behavioral therapy are proven approaches to treating chronic musculoskeletal pain (Herbert, Maher, Moseley, & Sherrington, 2001). For example, for people with LBP exercise therapy can reduce post-treatment pain intensity and disability and improve long-term function, and behavioral approaches can reduce pain intensity (Middelkoop et al., 2011). Physical therapists can also assist in making health-care services for musculoskeletal disorders more efficient. For example, having physical therapists as primary assessors for patients with musculoskeletal disorders has proven to be beneficial, entailing a reduced workload for physicians, satisfied patients, reduced waiting times, and length of stay of patients (Ludvigsson & Enthoven, 2012; Taylor et al., 2011). Similar research is needed in low-income countries, to assess the roles of physical therapists within both national health-care services and medical aid organizations, in the treatment of patients with musculoskeletal disorders.

An Aging World

Across the globe, life expectancy is rising. It is estimated that by 2050 the number of people aged 65 or older in the world will have increased from 8 to 16 percent (WHO, 2011). Of these, the majority will be in low-income countries: "Between 2010 and 2050, the number of older people in less developed countries is projected to increase more than 250 percent, compared with a 71 percent increase in developed countries" (WHO, 2011, p. 4). This rapid increase has consequences on different levels. There are social and economic factors to consider, combined with individual factors such as physical and mental changes. A growing ratio of older people to younger people means fewer people working, as well as fewer younger people to take care of the older people. In many low-income countries, current medical- and health-care services are not equipped to address the social and medical implications of an aging population. On top of this, the rapid rate at which the world is aging allows little time to increase services as needed. On the individual level, living longer means a higher likelihood of NCDs and more musculoskeletal disorders, and there may be more health variables to consider per older individual, compared with younger people. These different factors will entail considerable challenges for medical and

health-care systems, communities, and the economic health of nations, as well as for older individuals and their families.

Physical therapists, with their knowledge about body and function in relation to various different diseases and conditions, can work on individual, group, and community levels to address the particular needs of, and promote the health of, older people (Frändin, 2012). For this group, physical therapy is an important component in acute care (Blanc-Bisson, Dechamps, Gouspillou, Dehail, & Bourdel-Marchasson, 2008), intensive care (Cader et al., 2010), rehabilitation (Chaiyawat & Kulkantrakorn, 2012) and prevention, such as fall prevention (Sherrington et al., 2008). As discussed, physical therapists are well equipped to work with NCDs and musculoskeletal conditions, and several of these are linked to aging. Maintaining and developing function is essential to the prevention of age-related health concerns, and this includes physical activity and exercise. Even the very old can improve their muscle mass, strength, and endurance, which is of central importance for both health and function (Lexell, Frändin, & Helbostan, 2010).

Maternal Health

Covering a broad spectrum of conditions, maternal health has been, and continues to be, a major focus of international health efforts in low-income countries. Improving the health of women is the sole focus of one of the eight broad millennium development goals (MDG) (United Nations [UN], 2010). Maternal morbidities are among the most debilitating and disabling of all health conditions, yet they remain woefully unaddressed: "Maternal morbidity consists of a grim series of complications, most of which can easily be prevented or treated, including: Obstetric fistula, perineal damage, prolapsed uterus, stress incontinence, puerperal infection and sepsis, hemorrhage, hypertensive disorder (pre-eclampsia) and fits, anemia, infertility and ectopic pregnancy, depression and suicide" (The UK All Party Parliamentary Group on Population, Development and Reproductive Health, 2009, p. 10). These conditions are perpetuated by several different factors, on individual, group, and organizational levels: personal characteristics and prerequisites (physical and psychological) interplay with social- and economic status, cultural factors, beliefs and traditions, as well as political and structural factors, making several of these conditions much more difficult to tackle. Many of the conditions, being debilitating in themselves, become a bigger problem due to their social consequences. For example, urinary incontinence, one of the most common problems associated with pregnancy and the postnatal period (Mørkved & Bø, 1999; Wesnes, Rortveit, Bø, & Hunskaar, 2007), effectively limits possibilities to engage in social life as well as earning a livelihood. Certain practices, such as female genital mutilation (FGM), have deep roots in cultural traditions, making them much more difficult to address. Finally, many women in low-income countries carry heavy burdens of both raising families and supporting the livelihood of the family. Thus physical labor, bearing children, and high levels of mental stress both affect the various health issues mentioned and add further challenges to tackling them.

Physical therapists have an important role to play in maternal health, where physical exercise is a common denominator. Pelvic floor muscle training (PFMT) is one important exercise that has been shown to be important in both prevention and treatment of the various conditions mentioned above. For example, PFMT can be used to prevent and treat urinary and fecal incontinence (Bø, 2004; Boyle, Hay-Smith, Cody, & Mørkved, 2012; Mørkved & Bø, 2000), and there is evidence that PFMT can be used as conservative treatment for the symptoms and severity of pelvic organ prolapse (Brækken, Majida, Ellström Engh, & Bø, 2010; Hagen & Stral, 2011). Physical therapy is also a fundamental intervention in pre- and post-operative care for the management of obstetric fistula (Brook & Tessema, 2013; WHO, 2006). Even for women who have suffered FGM, physical therapists with the right training have a role to play: they can address the long-term complications of FMG, such as "urinary and fecal incontinence, bladder and/or urethral pain and dysfunction and chronic pelvic pain including dyspareunia and vulvodynia" (International Organization of Physical Therapists in Women's Health, 2013, p. 4). It should be mentioned that these complications occur not only from FGM, for example dyspareunia and vulvodynia. Physical therapists can participate in health education for women, including how to use their body in an ergonomically appropriate manner. And, as will be described below, physical therapists have an important role in targeting women's mental health and depression. There is thus a need for more physical therapists to engage in targeting women's health issues, and to be part of teams that work with these issues.

Child Health

Child mortality is another focus of the MDGs, and countries are beginning to witness reductions in mortalities, with the under-five mortality rate having dropped 35 percent since 1990 (UNICEF, WHO, WB, UNPD, 2011). As more children survive, however, there seems to be a higher likelihood of children developing impairments relating to congenital disorders, birth traumas, or non-fatal childhood illnesses or accidents. Child nutrition and the incidence of malnutrition remains a significant problem, with clear linkages to stunting and developmental delays requiring specialized medical/nutritional intervention, but also psychomotor development support.

Physical therapists are involved in the treatment and management of many childhood disorders—both congenital and acquired—which may impact functional abilities throughout life. They are particularly involved in disability prevention. For example, for babies born with the common congenital conditions of clubfoot or developmental dysplasia of the hip (DDH) early identification and treatment can reduce or prevent impairment and enable them to enjoy an active childhood and independence in adult life (Morcuende and Weinstein, 2003; Ponseti, 2000). Early detection is crucial, whereby physical therapists need to work together with midwives and community health workers.

Physical therapists are also involved in the treatment of other congenital conditions that require more long-term management, such as arthrogryposis,

spina bifida, and cerebral palsy (CP), to give improved functional outcomes (Bevan et al., 2007; Damiano, 2006; Schoenmakers, Uiterwaal, Gulmans, Gooskens, & Helders, 2005). Pediatric physical therapists have an in-depth understanding of child development and the effects of growth on the developing skeleton and are thus able to anticipate problems that may emerge and compromise a child's future functional abilities and to institute proactive management plans. Physical therapists working with child health in low-income countries thus need to work closely with the family, with other health professionals, and in the community, to enable early identification and long-term benefits of treatment and management.

Disability and Community Based Rehabilitation

People with disabilities constitute the largest minority on earth, with an estimated 15 percent of the earth's population having some form of disability (WHO, 2012a). The prevalence is higher in low-income countries than in high-income countries (WHO & WB, 2001). Disability and poverty are inextricably linked, and poor people have stated physical health as the key condition that impacts poverty (Narayan, Chambers, Kaul Shah, & Petesch, 2000): "health and strength matter most to those who have them the least and who are most likely to lose them" (p. 89). At the same time, persons with disabilities are often excluded from the same socioeconomic opportunities as those without disabilities.

Disability is related to functioning, and is a consequence of several different factors: it is the result of the dynamic interaction between health conditions and bodily impairment, limitations on activity, and participation restrictions imposed by interaction with the environment (WHO, 2001; WHO & WB, 2011). In low-income countries, disability is often targeted through community-based rehabilitation (CBR). CBR is an approach which aims to empower persons with disabilities across all sectors, such as health, education, and livelihood. It is especially appropriate in low-resourced settings because it mobilizes local resources and solutions. Rehabilitation services fall under the health component of CBR (WHO, 2010a). Physical therapists can, and do, play an important role both being part of the local resources and advocating for the rights and needs of people with disabilities. Compared with other health services in low-income countries, their role in CBR is fairly well established. This varies, however, depending on the context and what services are available. In Afghanistan, for example, CBR programs have developed, and provide, their own physical therapy services, since these services were insufficiently available in national health care structures (Wickford, 2011).

Furthermore, disability is often marginalized in national health-care structures and international health and medical organizations. People with disabilities often have less access to health services, and such access is markedly worse in low-income countries (WHO, 2012a). People with disabilities are also among the most vulnerable in natural disasters, armed conflict, and humanitarian emergencies (Sæbønes, 2011). Yet this group receives relatively little focus in emergency- and medical aid, compared to other vulnerable groups, such as women and

children. Physical therapists have an important part to play in these organizations, as key health professionals in general, but also as advocates for persons with disability. Thus, physical therapists and health professionals are called on to address the issues of disability through advocacy, research, and action on both local and global levels (Landry, Dyck, & Raman, 2007).

HIV/AIDS

Undoubtedly the biggest global health issue over the past decade has been the global AIDS epidemic. Vast resources have been utilized in combating the spread of the disease and evidence suggests it is working: as access to antiretroviral (ARV) drugs improves, the rates of AIDS-related deaths have begun to decline in many countries (UNAIDS, 2012). HIV is a disabling condition due to impairment caused by opportunistic infections but also by side effects of ARVs. Once again, global health trends are clear: as people live longer with HIV, more comorbidities and impairments are likely to rise, requiring the health community to respond in new ways. Tuberculosis (TB), one of the most noted opportunistic infections relating to HIV, has largely been perceived as a pulmonary illness. A significant number of people however (15.33 percent in 2011), are affected by TB outside of the lungs (WHO, 2012b). Of these, 35 percent are reported to be in the bones and joints, a condition which can cause significant motor impairments (Golden & Vikram, 2005). Vos et al. (2012) reported that years lived with disabilities relating to HIV/AIDS had risen by 172.2 percent between 1990 and 2010. Thus, HIV is increasingly being considered a chronic condition, bringing with it a new array of implications of managing a "long-wave" event (Nixon, Hanass-Hancock, Whiteside, and Barnett, 2011). In line with this, the demand on rehabilitation services, including physical therapy, is beginning to grow and there is evidence of the important role physical therapy can play in promoting and supporting the health and well-being of persons living with HIV (Nixon, Forman, et al., 2011). For example, promoting and supporting exercise, management of neuropathy, and supporting a return to work are three cited rehabilitation areas (O'Brien and Nixon, 2010).

Mental Health

Mental health is an essential component of overall health and well-being (Prince et al., 2007). Since mental and physical health are intertwined, for many of the physical health issues discussed in this paper, related mental health issues should be considered. Yet it is still an area where resources are insufficient, on a global level (WHO, 2012b). As with other health-care services, low-income countries have markedly less resources to manage mental health compared to high-income countries (Saxena, Thornicroft, Knapp, & Whiteford, 2007). Emergencies—due to man-made or natural disasters—can contribute to psychosocial problems and impact mental health negatively. Emergencies are devastating for any nation, but they hit harder in countries where the infrastructure and medical

and health-care services are less developed. Thus, on top of having poor resources to deal with mental health in general, low-income countries will be further challenged when hit with an emergency. Furthermore, targeting mental health related to emergencies is complex and requires a multidisciplinary approach grounded in a sound understanding of the local culture and context (Inter-Agency Standing Committee, 2007). It has also been documented that once basic needs and security are achieved for a population in emergencies, only a small percentage will need more advanced therapy (Agger, Jareg, Hertzberg, Mimica, & Rebien, 1999). Basic psychosocial support is what is required.

Physical activity is a beneficial and important intervention for people with mental health problems (Richardson et al., 2005). For example, exercise is a recommended treatment for mild to moderate depression (Josefsson, Lindwall, & Archer, 2013), yet there needs to be an increased awareness amongst physical therapists about their role in the treatment of this condition (Donaghy, 2007). There is more research needed in relation to physical therapists' role in promoting exercise and physical activity for people with mental health issues in general, and specifically in relation to needs in low-income countries. Furthermore, dealing with more complex mental health disorders requires specialized training for any health-care professional, and this applies also to physical therapists. It is also significant that physical therapists often spend considerable time with patients, which means they may have more chance of identifying mental health issues. Thus they can help channel patients who need more specific interventions. This will require more training for national and expatriate physical therapists in general mental health.

Meeting the Needs—Recommendations for Action

Whilst the aim of the paper is to raise awareness to global health actors on the role that physical therapy can play, there are also many factors to consider in relation to enabling access to services. It is beyond the scope of this paper to explore all aspects required to make this a reality, and more research is needed around successful integration of physical therapy and other rehabilitation- and allied health services into health systems. But a few recommendations are given below.

Emerging Trends: Integrating Physical Therapy in Health Systems Strengthening, Universal Health Coverage, and the Post-Millenium Development Goals

A prominent feature of the global health landscape is the growing emergence and importance of a health systems strengthening approach. Recognizing that the sector has become somewhat silo'd into management of health by disease, development organizations such as USAID have moved to create sections focused on broader health systems strengthening. Though several models of a health system have been proposed, the most commonly utilized is the six pillar model endorsed by the WHO (2010c)—Service Delivery, Health Financing, Human Resources, Health Information Systems, Medicines and Technologies, and Leader-

ship and Governance. Recognizing the scope of physical therapy within these six pillars is important to begin to "speak the language" of health commissioners and ensure that physical therapy is considered adequately. The groundbreaking Global Burden of Disease, as alluded to already, is a potential game changer for the consideration of allied health services within global health, including for physical therapy. For example, with the clear evidence of an aging population with an increasing proportion of years lived with disability (YLDs) accounting for total disability-adjusted life years (DALYs) (Murray et al., 2012), the global health community has been called on to more adequately address these issues. With the impending processes around the post-MDG agenda, the health community is urged to better consider addressing morbidity through health systems approaches such as physical therapy. This also includes a more interdisciplinary approach.

Interdisciplinary Care

As we have described, physical therapists can address many different health needs found in low-income countries. But since health is affected by many different factors, for health care services to work efficiently, there needs to be both a representation of key social and health professionals (physicians, physical therapists, nurses, midwives, social workers, and so on), as well as a well-functioning collaboration between them. This is, in fact, a base requirement in the goal of global health initiatives (Koplan et al., 2009), and working in a team can be rewarding for the team; personally valuable; and can lead to high quality, caring practice (Purtilo, 2012). Furthermore physical therapists can play an important role in reducing the workload on other health workers, particularly physicians.

Our personal experience, however, is that in medical and rehabilitation projects in low-income countries, an interdisciplinary approach is rare. Awareness and understanding of rehabilitation professions seems low. To compound this, in low-income countries, physical therapists work not only in isolation from other medical professionals (when they exist), but there is often poor collaboration with health-care workers. This can result in general weak detection and referral mechanisms (by health workers) to rehabilitation both for adults and children, and lead to a lack of continuity of care between acute/emergency interventions and post-acute rehabilitation. To address these issues, awareness of the role of physical therapists and of the wider rehabilitation sector needs to be improved. Medical-, nursing- and public health institutions are encouraged to reflect on whether their curricula appropriately and sufficiently consider concepts of disability and rehabilitation within the health sector. Finally, such interdisciplinary care requires the availability of physical therapists, and the training of physical therapists is paramount to enable all that has been said.

Education of National Physical Therapists

A comprehensive study on human resources for health within the rehab sector has highlighted a woeful lack of trained professionals, including physical

therapists (Gupta et al., 2011). In many low-income countries, physical therapy is often provided by international organizations, including a turn-over of international physical therapists who provide both services and training. Here it is of relevance to note how the profession has developed. In several high-income countries, physical therapy has historically grown as a result of wars (such as WWI and WWII) or epidemics (polio), in response to the subsequent sudden influx of injuries and impairments. The profession has grown from *within* the country, based on needs in the country. Physical therapy has its roots in high-income ("Western") countries (Norris & Allotey, 2008), and the majority of physical therapy research is done in high-income contexts. In many low-income countries, systems of rehabilitation are similarly often based on needs brought on by war or disaster. Yet they are more likely to be brought in from the *outside*, funded and supported by international donors or organizations as opposed to establishing rehabilitation services and physical therapy as an integral part of national health systems. This has direct implications for the development potential of the physical therapy profession.

Thus a considerable challenge, which is not unique for physical therapy, is the training of national professionals and the development of physical therapy schools. There are strong examples of such work being done in certain countries such as Benin and Afghanistan. Yet these still appear to be the exception rather than the rule, there are many challenges involved, and even in these countries the numbers of professionals being trained is inadequate to meet the needs. Furthermore, rarely is this work researched, which limits the insight into practice as well as the generation of knowledge and the sharing of lessons learned. As a baseline, training programs and curricula need to be adapted to the local contexts, but the manner in which this is done in the best way merits further attention and research.

Contextualizing Actions

In light of all that has been said, there is an important final point to be made pertaining to the roots of physical therapy. With a view of knowledge as contextually and socially developed, and physical therapy as a cultural practice which stems from "Western culture" and "white, middle-class ideologies" (Norris & Allotey, 2008, p. 153), the question of (universal) applicability should be kept in mind. Physical therapy must be adapted contextually and approached collaboratively (Wickford, 2010), and in the discussion about encouraging physical activity as a key component of promoting health, one must take into consideration contextual and cultural factors.

Culture and context directly affects the way people view health, illness, their body, and the treatment of their body (MacLachlan, 2006). There is an increasing understanding of the importance of physical therapists considering factors relating to culture in their work with clients/patients (Dean, 2009a; Hunt, 2007; Norris & Allotey, 2008): "Sensitivity to cultural as well as individual differences in targeting health education strategies is essential to the long-term success of the

intervention" (Dean, 2009a, p. 346). This is naturally also the case for physical therapists engaging in providing services and promoting the profession in a different country and culture than their own (Wickford & Rosberg, 2012). Even in 1985, Williams stated that:

> Physical therapy practice is international, but the context of practice is not. … It dawns on us that the delivery of physical therapy services cannot be the same in all countries. We know there are different health needs, different economic, health care and educational systems, and different demographic characteristics. Yet rarely do those outside the country concerned, and sometimes even those in it, appreciate how those differences affect physical therapy practice. (p. 3)

More than 25 years later, we still have lessons to learn in this regard. Culturally adapted and locally rooted health promotion and intervention is essential. The roots of the profession in high-income countries (Norris & Allotey, 2008) has implications for both expatriate and national physical therapists working with promoting the physical therapy profession in low-income countries. Physical therapists will base their actions and professional practice on their understanding of physical therapy, linked to their particular educational and professional contexts of practice. This has implications for what they view as important to focus on and develop in terms of the profession, as well as for their manner of working, be it teaching or clinical practice. In terms of physical therapists from high-income countries working in low-income countries, they are representatives of the rich world, and this can entail additional complexities in light of power and expectations and the impact of links to a colonial history and a post-colonial development system.

Thus, when introducing physical therapy into a new country and culture, physical therapy practice and education must be developed in relation to the local context and its needs and practices, and it must take a collaborative approach (Edwards, Wickford, Adel, & Thoren, 2011; Wickford, Edwards, & Rosberg, 2012; Wickford & Rosberg, 2012). This is challenging. It takes time and resources that often do not fit in the short-term requirements of donors. It requires humility, dedication, and experience from those engaging in the work. It requires considerable effort, curiosity, and collaboration, as well as self-awareness and self-critical reflection. Even when striving to collaborate and base the work on local needs and practices, mistakes are made. However, engaging in such work with a communicative and collaborative approach is rewarding and can lead to greater understanding, resulting in both professional and personal development (Wickford & Rosberg, 2012).

Conclusion and Recommendations

To conclude, irrespective of where we come from, of level of function and ability, or of economic or social status, health is inextricably linked to physical

activity. We need to be able to function within our environments to be able to be physically active. In many low-income countries, health issues are a considerable burden, on individual as well as social, economic, and political levels. With their knowledge about the human body and its functions, about physical activity and exercise, and in facilitating participation in society, physical therapists have an important role to play in prevention and intervention of disease and disability and in the promotion and maintenance of health and well-being in these countries.

There is some research available regarding the role and relevance of physical therapy for health needs in low-income countries, yet more is needed. Furthermore, much of the research that has been presented regarding physical therapy has been done in high-income contexts. Views of health, the body, roles within healthcare, and so on are culturally affected, and thus, more research is needed in how physical therapists can appropriately engage in targeting global health issues in a contextually relevant manner. There is need for more training of national physical therapists in low-income countries, so that there are the human resources available locally. We also encourage greater collaboration with other health professionals in promoting physical activity as part of mainstream medical- and health services. Finally, we encourage more critical reflection, and more innovative and creative approaches to how to provide the best services possible in accordance to the needs, to ensure that we are, ethically and morally, meeting the needs of our fellow women, men, and children across the globe.

Notes

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References

Adler, Nancy E., and Katherine Newman. 2002. "Socioeconomic Disparities In Health: Pathways And Policies." *Health Affairs* 21 (2): 60–76.

Agger, Inger, Elizabeth Jareg, Anne Hertzberg, Jadrenka Mimica, and Claus C. Rebien. 1999. *Evaluation of Norwegian Support to Psycho-Social Projects in Bosnia-Herzegovina and the Caucasus*. Oslo: Ministry of Foreign Affairs.

Alappat, Chris, Gary Siu, Aaron Penfold, Brendan McGovern, Jennifer McFarland, Sudha Raman, and Michel D. Landry. 2007. "Role of Canadian Physical Therapists in Global Health Initiatives: SWOT Analysis." *Physiotherapy Canada* 59 (4): 272–85.

Alwan, Ala, and David R. MacLean. 2009. "A Review of Non-communicable Disease in Low- and Middle-Income Countries." *International Health* 1: 3–9.

Aspray, Terence J., Ferdinand Mugusi, Seif Rashid, David Whiting, Richard Edwards, K. George, Alberti Nigel, C. Unwin, and The Essential Non-Communicable Disease Health Intervention Project. 2000. "Rural and Urban Differences in Diabetes Prevalence in Tanzania: The Role of Obesity, Physical Inactivity and Urban Living." *Transactions of the Royal Society of Tropical Medicine and Hygiene* 94 (6): 637–44.

Bevan, Wesley P., Judith G. Hall, Micheal Bamshad, Lynn T. Staheli, Kenneth M. Jaffe, and Kit Song. 2007. "Arthrogryposis Multiplex Congenita (Amyoplasia): An Orthopaedic Perspective." *Journal of Pediatric Orthopaedics* 27 (5): 594–600.

Blanc-Bisson, C. A. Dechamps, G. Gouspillou, P. Dehail, and I. Bourdel-Marchasson. 2008. "A Randomized Controlled Trial on Early Physiotherapy Intervention versus Usual Care in Acute Care Unit for Elderly: Potential Benefits in Light of Dietary Intakes." *The Journal of Nutrition Health and Aging* 12 (6): 395–9.

Bø, Kari. 2004. "Pelvic Floor Muscle Training Is Effective in Treatment of Female Stress Urinary Incontinence, but How Does It Work?" *International Urogynecology Journal* 15 (2): 76–84.

Bouchard, Claude, Steven N. Blair, and William L. Haskell. 2012. *Physical Activity and Health*, 2nd ed. Champaign, IL: Human Kinetics.

Boyle, R., E. J. C. Hay-Smith, J. D. Cody, and S. Mørkved. 2012. "Pelvic Floor Muscle Training for Prevention and Treatment of Urinary and Faecal Incontinence in Antenatal and Postnatal Women." *Cochrane Database of Systematic Reviews* 10: 1–77.

Brækken, Ingeborg Hoff, Memona Majida, Marie Ellström Engh, and Kari Bø. 2010. "Can Pelvic Floor Muscle Training Reverse Pelvic Organ Prolapse and Reduce Prolapse Symptoms? An Assessor-Blinded, Randomized, Controlled Trial." *American Journal of Obstetrics and Gynecology* 203 (2): 170. e1–7.

Breivik, Harald, Beverly Collett, Vittorio Ventafridda, Rob Cohen, and Derek Gallacher. 2006. "Survey of Chronic Pain in Europe: Prevalence, Impact on Daily Life, and Treatment." *European Journal of Pain* 10 (4): 287–333.

Brennan, Richard J., and Ronald J. Waldman. 2006. "The South Asian Earthquake Six Months Later—An Ongoing Crisis." *New England Journal of Medicine* 354 (17): 1769–71.

Brook, Gill, and Azeb Befekadu Tessema. 2013. "Obstetric Fistula: The Use of Urethral Plugs for the Management of Persistent Urinary Incontinence Following Successful Repair." *International Urogynecology Journal* 24 (3): 479–84.

Cader, Samária Ali, Rodrigo Gomes Souzade Vale, Juracy Correa Castro, Silvia Corrêa Bacelar, Cintia Biehl, Maria Celeste Vega Gomes, Walter Eduardo Cabrera, and Estélio Henrique Martin Dantas. 2010. "Inspiratory Muscle Training Improves Maximal Inspiratory Pressure and May Assist Weaning in Older Intubated Patients: A Randomised Trial." *Journal of Physiotherapy* 56 (3): 171–7.

Chaiyawat, Pakaratee, and Kongkiat Kulkantrakorn. 2012. "Randomized Controlled Trial of Home Rehabilitation for Patients With Ischemic Stroke: Impact Upon Disability and Elderly Depression." *Psychogeriatrics* 12 (3): 193–9.

Damiano. Diane L. 2006. "Activity, Activity, Activity: Rethinking Our Physical Therapy Approach to Cerebral Palsy." *Physical Therapy* 86 (11): 1534–40.

Dans, Antonio, Nawi Ng, Cherian Varghese, Shyong E. Tai, Rebecca Firestone, and Ruth Bonita. 2011. "The Rise of Chronic Non-Communicable Diseases in Southeast Asia: Time for Action." *The Lancet* 377 (9766): 680–9.

Dean, Elizabeth. 2009a. "Physical Therapy in the 21st Century (Part I): Toward Practice Informed by Epidemiology and the Crisis of Lifestyle Conditions." *Physiotherapy Theory & Practice* 25 (5/6): 330–53.

———. 2009b. "Physical Therapy in the 21st Century (Part II): Evidence-Based Practice Within the Context of Evidence-Informed Practice." *Physiotherapy Theory and Practice* 25 (5–6): 354–68.

Dean, Elizabeth, Saud Al-Obaidi, Armele Dornelas De Andrade, Rik Gosselink, Gloria Umerah, Sami Al-Abdelwahab, Joseph Anthony. et al. 2011. "The First Physical Therapy Summit on Global Health: Implications and Recommendations for the 21st Century." *Physiotherapy Theory and Practice* 27 (8): 531–47.

Donaghy, Marie E. 2007. "Exercise Can Seriously Improve Your Mental Health: Fact or Fiction?" *Advances in Physiotherapy* 9 (2): 76–88.

Dwyer, James. 2005. "Global Health and Justice." *Bioethics* 19 (5–6): 460–75.

Edwards, Ian, Jenny Wickford, Aziz Ahmed Adel, and Judy Thoren. 2011. "Living a Moral Professional Life Amidst Uncertainty: Ethics for an Afghan Physical Therapy Curriculum." *Advances in Physiotherapy* 13 (1): 26–33.

Frändin, Kerstin. 2012. *Äldres hälsa—ett sjukgymnastiskt perspektiv [Health of the elderly—the physiotherapy perspective]*. Lund: Studentlitteratur.

Glanz, Karen, Barbara K. Rimer, and K. Viswanath. 2008. *Health Behaviour and Health Education—Theory, Research, and Practice*, 4th ed. San Francisco: Jossey-Bass.

Golden, M. P., and H. R. Vikram. 2005. "Extrapulmonary Tuberculosis: An Overview." *American Family Physician* 72 (9): 1761–8.

Gupta, Neeru, Carla Castillo-Laborde, and Michel D. Landry. 2011. "Health-Related Rehabilitation Services: Assessing the Global Supply of and Need for Human Resources." *BMC Health Services Research* 11: 276–86.

Hagen, S., and D. Starl. 2011. "Conservative Prevention and Management of pelvic Organ Prolapse in Women." *Cochrane Database of Systematic Reviews* 12: 1–43.

Herbert, Robert D., Chris G. Maher, Anne M. Moseley, and Catherine Sherrington. 2001. "Effective Physiotherapy." *BMJ* 323 (7316): 788–90.

Higgs, Joy, Kathryn Refshauge, and Elizabeth Ellis. 2001. "Portrait of the Physiotherapy Profession." *Journal of Interprofessional Care* 15 (1): 79–89.

Horton, Richard. 2012. "GBD 2010: Understanding Disease Injury and Risk." *The Lancet* 380 (9859): 2053–4.

Hunt, Matthew. 2007. "Taking Culture Seriously: Considerations for Physiotherapists." *Physiotherapy* 93 (3): 229–32.

Inter-Agency Standing Committee. 2007. *IASC Guidelines on Mental Health and Psychosocial Support in Emergency Settings*. Geneva: Inter-Agency Standing Committee.

International Organization of Physical Therapists in Women's Health. 2013. *Position Statement: Female Genital Mutilation*. International Organization of Physical Therapists in Women's Health, WCPT. http://www.ioptwh.org/pdfs/position-statements/IOPTWH%20Female%20Genital%20Mutilation.pdf. Accessed January 26, 2013.

Josefsson, T., M. Lindwall, and T. Archer. 2013. "Physical Exercise Intervention in Depressive Disorders: Meta-Analysis and Systematic Review." *Scandinavian Journal of Medicine & Science in Sports*, doi: 10.1111/sms.12050

Kay, Elizabeth, Charles Kilonzo, and Mary Jane Harris. 1994. "Improving Rehabilitation Services in Developing Nations: The Proposed Role of Physiotherapists." *Physiotherapy* 80 (2): 77–82.

Kohl, Harold W., Cora Lynn Craig, Estelle Victoria Lambert, Shigeru Inoue, Jasem Ramadan Alkandari, Grit Leetongin, and Sonja Kahlmeier. 2012. "The Pandemic of Physical Inactivity: Global Action for Public Health." *The Lancet* 380 (9838): 294–305.

Koplan, Jeffrey P., Christopher T. Bond, Michael H. Merson, Reddy K. Srinath, Mario Henry Rodriguez, Nelson K. Sewankambo, and Judith N. Wasserheit. 2009. "Towards a Common Definition of Global Health." *The Lancet* 373 (9679): 1993–5.

Landry, Michel D., Tyler Dyck, and Sudha Raman. 2007. "Poverty, Disability and Human Development: A Global Challenge for Physiotherapy in the 21st Century." *Physiotherapy* 93 (4): 233–4.

Lee, I. Min, Eric J. Shiroma, Felipe Lobelo, Pekka Puska, Steven N. Blair, and Peter T. Katzmarzyk. 2012. "Effect of Physical Inactivity on Major Non-Communicable Diseases Worldwide: An Analysis of Burden of Disease and Life Expectancy." *The Lancet* 380 (9838): 219–29.

Levy, Barry S., and Victor W. Sidel. 2008. *War and Public Health*, 2nd ed. New York: Oxford University Press.

Lexell, Jan, Kerstin Frändin, and Jorunn L. Helbostan. 2010. "Elderly." In *Physical Activity in the Prevention and Treatment of Disease*, 200–8. Stockholm: Swedish National Institute of Public Health.

Louw, Quinette A., Linzette D. Morris, and Kerstin Grimmer-Somers. 2007. "The Prevalence of Low Back Pain in Africa: A Systematic Review." *BMC Musculoskeletal Disorder* 8: 105.

Ludvigsson, Maria Landén, and Paul Enthoven. 2012. "Evaluation of Physiotherapists as Primary Assessors of Patients With Musculoskeletal Disorders Seeking Primary Health Care." *Physiotherapy* 98 (2): 131–7.

MacLachlan, Malcolm. 2006. *Culture and Health: A Critical Perspective Towards Global Health*. Chichester, UK: John Wiley & Sons Ltd.

Michie, Susan, Charles Abraham, Craig Whittington, and John McAteer. 2009. "Effective Techniques in Healthy Eating and Physical Activity Interventions: A Meta-Regression." *Health Psychology* 28 (6): 690–701.

Middelkoop, Marienke, Sidney M. Rubinstein, Ton Kuijpers, Arianne P. Verhagen, Raymond Ostelo, Bart W. Koes, and Maurits W. Tulder. 2011. "A Systematic Review on the Effectiveness of Physical and Rehabilitation Interventions for Chronic Non-Specific Low Back Pain." *European Spine Journal* 20 (1): 19–39.

Moore, Melinda, Philip Gould, and Barbara S. Keary. 2003. "Global Urbanization and Impact on Health." *International Journal of Hygiene and Environmental Health* 206 (4–5): 269–78.

Morcuende, Jose A., and Stuart L. Weinstein. 2003. "Developmental Dysplasia of the Hip: Natural History, Results of Treatment, and Controversies." In *Controversies in Hip Surgery*, ed. R. Bourne. Oxford: Oxford University Press, 1–19.

Mørkved, Siv, and Kari Bø, 1999. "Prevalence of Urinary Incontinence During Pregnancy and Postpartum." *International Urogynecology Journal* 10 (6): 394–8.

———. 2000. "Effect of Postpartum Pelvic Floor Muscle Training in Prevention and Treatment of Urinary Incontinence: A One-Year Follow Up." *BJOG: An International Journal of Obstetrics & Gynaecology* 107 (8): 1022–8.

Murray, Christopher J. L., Theo Vos, Rafael Lozano, Mohsen Naghavi, Abraham D. Flaxman, Michaud Catherine, Majid Ezzati, et al. 2012. "Disability-Adjusted Life Years (DALYs) for 291 Diseases and Injuries in 21 Regions, 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380 (9859): 2197–223.

Narayan, Deepa, Robert Chambers, Meera Kaul Shah, and Patti Petesch. 2000. *Voices of the Poor: Crying out for Change, World Development Report*. New York: Published for the World Bank, Oxford University Press.

NCD Alliance. 2013. *The Global Epidemic*. http://www.ncdalliance.org/globalepidemic. Accessed January 25, 2013.

Nixon, Stephanie A., Jill Hanass-Hancock, Alan Whiteside, and Tony Barnett. 2011. "The Increasing Chronicity of HIV in Sub-Saharan Africa: Re-Thinking HIV as a Long-Wave Event in the Era of Widespread Access to ART." *Globalization and Health* 7: 41–5.

Nixon, Stephanie, Lisa Forman, Jill Hanass-Hancock, Muriel Mac-Seing, Norbert Munyanukato, Hellen Myezwa, and Chiara Retis. 2011. "Rehabilitation: A Crucial Component in the Future of HIV Care and Support." *South African Journal of HIV Medicine* 12 (2): 12–7.

Norris, Meriel, and Pascale Allotey. 2008. "Culture and Physiotherapy." *Diversity in Health and Social Care* 5: 151–9.

O'Brien, Kelly K., and Stephanie A. Nixon. 2010. "Evidence-Based Management of an Individual Living With HIV." *Physiotherapy Canada* 62 (3): 202–5.

Patz, Jonathan A., Diarmid Campbell-Lendrum, Tracey Holloway, and Jonathan A. Foley. 2005. "Impact of Regional Climate Change on Human Health." *Nature* 438 (7066): 310–7.

Ponseti, I. V. 2000. "Clubfoot Management." *Journal of Pediatric Orthopaedics* 20 (6): 699–700.

Prince, Martin, Vikram Patel, Shekhar Saxena, Mario Maj, Joanna Maselko, Michael R. Phillips, and Atif Rahman. 2007. "No Health Without Mental Health." *The Lancet* 370 (9590): 859–77.

Purtilo, Ruth B. 2012. "What Interprofessional Teamwork Taught me About an Ethics of Care." *Physical Therapy Reviews* 17 (3): 197–201.

Richardson, Caroline R., Guy Faulkner, Judith McDevitt, Gary S. Skrinar, Dori S. Hutchinson, and John D. Piette. 2005. "Integrating Physical Activity Into Mental Health Services for Persons With Serious Mental Illness." *Psychiatric Services* 56 (3): 324–31.

Rieker, Patricia P., and Chloe E. Bird. 2005. "Rethinking Gender Differences in Health: Why We Need to Integrate Social and Biological Perspectives." *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences* 60 (Special Issue 2): S40–7.

Sæbønes, Ann-Marit. 2011. Chair's summary. In *Disability in Emergencies and Conflicts—Reaching the Most Vulnerable*. Oslo, Norway.

Saxena, Shekhar, Graham Thornicroft, Martin Knapp, and Harvey Whiteford. 2007. "Resources for Mental Health: Scarcity, Inequity, and Inefficiency." *Lancet* 370: 878–89.

Schoenmakers, M. A. G. C., C. S. P. M. Uiterwaal, V. A. M. Gulmans, R. H. J. M. Gooskens, and P. J. M. Helders. 2005. "Determinants of Functional Independence and Quality of Life in Children With Spina Bifida." *Clinical Rehabilitation* 19 (6): 677–85.

Sherrington, Catherine, Julie C. Whitney, Stephen R. Lord, Robert D. Herbert, Robert G. Cumming, and Jacqueline C. T. Close. 2008. "Effective Exercise for the Prevention of Falls: A Systematic Review and Meta-Analysis." *Journal of the American Geriatrics Society* 56 (12): 2234–43.

Sundberg, Carl Johan, Anna Jansson, Carina Edling, and Mia Wadman. 2010. *Physical Activity in the Prevention and Treatment of Disease*. Stockholm: Swedish National Institute of Public Health.

Taylor, Nicholas F., Emily Norman, Emily Roddy, Clarice Tang, Anne Pagram, and Anne Hearn. 2011. "Primary Contact Physiotherapy in Emergency Departments Can Reduce Length of Stay for Patients With Peripheral Musculoskeletal Injuries Compared With Secondary Contact Physiotherapy: A Prospective Non-Randomised Controlled Trial." *Physiotherapy* 97 (2): 107–14.

The UK All Party Parliamentary Group on Population, Development and Reproductive Health. 2009. *Better off Dead? A Report on Maternal Morbidity*. London, UK: All Party Parliamentary Group on Population, Development and Reproductive Health.

United Nations (UN). 2010. *The Millenium Development Goals*. New York: United Nations.

UNAIDS. 2012. *World AIDS Day Report 2012*. Geneva: UNAIDS.

UNICEF, WHO, WB, UNPD. 2011. *Levels and trends in child mortality. Report 2011*. New York: UNICEF.

Vos, Theo, Abraham D. Flaxman, Mohsen Naghavi, Rafael Lozano, Catherine Michaud, Majid Ezzati, Kenji Shibuya, et al. 2012. "Years Lived With Disability (YLDs) for 1160 Sequelae of 289 Diseases and Injuries 1990–2010: A Systematic Analysis for the Global Burden of Disease Study 2010." *The Lancet* 380 (9859): 2163–96.

Wesnes, Stian Langeland, Guri Rortveit, Kari Bø, and Steinar Hunskaar. 2007. "Urinary Incontinence During Pregnancy." *Obstetrics & Gynecology* 109 (4): 922–8.

Wickford, Jenny. 2010. *Physiotherapists in Afghanistan. Exploring, Encouraging and Experiencing Professional Development in the Afghan Development Context*. Doctoral dissertation, Institute of Neuroscience and Physiology, at Sahlgrenska, Academy, University of Gothenburg, Gothenburg.

———. 2011. "Considerations for Enhanced Community Based Physiotherapy Services in Afghanistan." In *Development Efforts in Afghanistan: Is there a Will and a Way? The Case of Disability and Vulnerability*, ed Francois Trani Jean. Paris: L'Harmattan.

Wickford, Jenny, Ian Edwards, and Susanne Rosberg. 2012. "A Transformative Perspective on Learning and Professional Development of Afghan Physiotherapists." *Physiotherapy Theory & Practice* 28 (4): 269–82.

Wickford, Jenny, John Hultberg, and Susanne Rosberg. 2008. "Physiotherapy in Afghanistan—Needs and Challenges for Development." *Disability and Rehabilitation* 30 (4): 305–13.

Wickford, Jenny, and Susanne. Rosberg. 2012. "From Idealistic Helper to Enterprising Learner: Critical Reflections on Personal Development Through Experiences From Afghanistan." *Physiotherapy Theory and Practice* 28 (4): 283–91.

Wilkinson, Richard, and Michael Marmot. 2003. *Social Determinants of Health—The Solid Facts*, 2nd ed. Geneva: WHO.

Williams, Joyce. 1985. "Physiotherapy—An International Profession." *Physiotherapy Theory and Practice* 1 (1): 3–5.

World Confederation for Physical Therapy (WCPT). 2011. *Policy Statement. Description of Physical Therapy*. London: World Confederation for Physical Therapy.

———. 2013. *WCPT member organisations. World Confederation for Physical Therapy*. http://www.wcpt.org/members. Accessed February 2, 2013.

World Health Organization (WHO). 1948. *WHO Definition of Health*. http://www.who.int/about/definition/en/print.html

———. 2001. *International Classification of Functioning, Disability and Health*. Geneva: World Health Organisation.

———. 2006. *Obstetric Fistula: Guiding Principles for Clinical Management and Programme Development*. Geneva: World Health Organisation.

———. 2009. *Global Health Risks. Mortality and Burden Och Disease Attributable to Selected Major Risks*. Geneva: World Health Organisation.

———. 2010a. *Community-Based Rehabilitation. CBR Guidelines. Health Component*. Malta: World Health Organisation.

———. 2010b. *Global Recommendations on Physical Activity for Health*. Geneva: World Health Organisation.

———. 2010c. *Monitoring the Building Blocks of Health Systems: A Handbook of Indicators and Their Measurement Strategies*. Geneva: World Health Organisation.

———. 2011. *Global Health and Aging*. World Health Organisation. http://www.who.int/ageing/publications/global_health.pdf. Accessed December 1, 2012.

———. 2012a. *Disability and Health*. World Health Organisation. http://www.who.int/mediacentre/factsheets/fs352/en/index.html. Accessed December 1, 2012.

———. 2012b. *Global Tuberculosis Report*. Geneva: World Health Organisation.

———. 2012c. *World Health Statistics 2012*. Geneva: World Health Organisation.

WHO, WB. 2001. *World Report on Disability*. Malta: World Health Organisation.