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## EDITORIAL

*The Role of Physical Therapists in the Medical Response Team Following a Natural Disaster: Our Experience in Nepal*

## RESEARCH REPORTS

*Effects of Weight-Bearing Biofeedback Training on Functional Movement Patterns Following Total Knee Arthroplasty: A Randomized Controlled Trial*

*Higher Knee Flexion Moment During the Second Half of the Stance Phase of Gait Is Associated With the Progression of Osteoarthritis of the Patellofemoral Joint on Magnetic Resonance Imaging*

*Resisted Side Stepping: The Effect of Posture on Hip Abductor Muscle Activation*

*The Development and Psychometric Properties of the Patient Self-Report Neck Functional Status Questionnaire (NFSQ)*

*Detecting Meniscal Tears in Primary Care: Reproducibility and Accuracy of 2 Weight-Bearing Tests and 1 Non-Weight-Bearing Test*

*Validation of a Clinical Test of Thoracolumbar Dissociation in Chronic Low Back Pain*

*Ultrasound Imaging in Postpartum Women With Diastasis Recti: Intrarater Between-Session Reliability*

## CASE REPORT

*Manual Physical Therapy Following Immobilization for Stable Ankle Fracture: A Case Series*

## MUSCULOSKELETAL IMAGING

*Pain and Giving Way Following Total Knee Arthroplasty*



# The Role of Physical Therapists in the Medical Response Team Following a Natural Disaster: Our Experience in Nepal

*A Message From the Nepal Physiotherapy Association*

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## THE EARTHQUAKES

Two major earthquakes, registering 7.8 and 7.3 on the Richter scale, struck Nepal on April 25 and May 12, 2015, respectively. The extent of the damage is gradually being established, with an estimated 8699 deaths, 22 000 injuries, and 505 000 homes completely destroyed.<sup>7</sup> The true numbers may never be known, given the unique terrain of Nepal, where affected villages may be a 4- to 5-day walk from a road head,

posing formidable barriers to the full survey of damages. Of the 75 districts of Nepal, 14 were severely affected by the earthquakes and account for most of the deaths, injuries, and damage to homes. The combination of poor building construction, high population density in the larger cities, and the complex geography of Nepal made the earthquakes and aftershocks particularly devastating.

Most people with serious injuries have been transported to more central locations in Kathmandu and district centers for immediate medical treatment, including surgeries. Of the 1400 health institutions located in the affected areas, 446 have been completely destroyed and 765 partially damaged<sup>8</sup>; the remaining

major hospitals and health facilities have been stretched to their limits. Dhulikhel Hospital is located in Kavre, one of the most affected districts. At one point during the early days of disaster, with a capacity of just over 350 beds, this hospital accommodated more than 900 patients, some in makeshift wards, in corridors, and on an outdoor courtyard under tents. The hospital treated some 3679 individuals with injuries and performed 554 complex surgeries and 3414 minor surgeries/procedures in the first 8 weeks of the disaster.<sup>8</sup>

As patients become ready for discharge from these acute-care facilities, they face additional challenges to their recovery. The remoteness of their villag-

es, loss of dwellings, and limited health care services in rural areas, including rehabilitation services, mean that patients requiring ongoing care or rehabilitation cannot return to their homes; they may need to stay in temporary dwellings closer to established services. With the arrival of the monsoon season, floods and inevitable landslides are making access to earthquake-affected areas even more difficult, compounding the problems for those without homes and those needing to travel for medical treatment. The monsoon season is also likely to bring more health issues related to water safety and a higher risk of diseases such as diarrhea and cholera.

### Physical Injuries

Most injuries occurred from falling objects and collapsing houses, with a surprising additional number sustained from falls while running out of or jumping from buildings. Preliminary data from major trauma centers indicate that around 70% of the injuries treated were fractures (spine, pelvis, upper and lower limbs),

with a large number resulting in spinal cord injuries (200-300), amputations (40-60), as well as other potentially disabling conditions such as traumatic brain injuries, crush injuries, and neuropraxias. Most of the injured have sustained multiple traumas, and an estimated 1500 survivors will require medium- to long-term rehabilitation services.<sup>8</sup>

### Psychological Impact

In addition to their significant physical trauma, many patients are also grieving the loss of relatives and are fearful of recurring shocks and damage. Many people remain on edge and ready to evacuate buildings at the slightest noise, tremor, or subjective feeling of tremor. Some continue to sleep outdoors for fear of another earthquake at night, and some patients are reluctant to be accommodated inside hospital wards. Despite the ongoing effects of the trauma, the majority of the population has shown incredible resolve and resilience; however, the long-term psychological impact of the earthquake is unknown.

### Physical Therapy in Nepal

Physical therapy is a relatively new profession in Nepal. There are currently 393 registered therapists in Nepal, with a large proportion based in Kathmandu and a lesser number in the towns and villages. There are established community-based rehabilitation networks across Nepal, and these extend into some of the more remote areas. However, there are still many areas of Nepal without access to physical therapy services. The majority of the physical therapists work in facilities providing care for musculoskeletal conditions, with some working in neurology and rehabilitation units, and a smaller number in intensive-care units, obstetrics, and pediatrics.

### The Role of Physical Therapists in Disaster Response

The role of physical therapists in responding to disasters is generally poorly defined,<sup>1,3</sup> but rehabilitation has increasing

prominence in humanitarian guidelines, such as the 2011 Sphere standards<sup>4</sup> and the 2013 minimum standards for foreign medical teams.<sup>6</sup> It is widely acknowledged that a team approach to disaster management is imperative,<sup>2</sup> and this has certainly been our experience in Nepal. Initially, in the confusion of the first few days postearthquake, physical therapists across Nepal worked alongside orthopaedic and emergency doctors, nurses, and other health providers, assisting in the screening and transfer of patients as well as providing acute-injury management. This included applying braces, plaster casts, temporary plaster backslabs, and skin traction for fractured femurs and dislocated hips; helping in the dressing of wounds; and providing assistive devices. Physical therapists were also involved in their more traditional roles in these early days: mobilizing patients, prescribing exercises, and positioning patients to prevent potential secondary complications after surgery and after prolonged bed rest.

The role of physical therapy has been and will be even more crucial in the medium- to long-term response, to assist the injured to regain optimal function and to help them return to their previous level of activities. Currently, a significant number of the patients being released from hospitals are being assisted by physical therapists from Handicap International and other organizations in temporary "step-down" rehabilitation units. As the mapping of injuries and determination of rehabilitation needs continue, the mounting challenge will be to deliver rehabilitation services to the injured, in particular those who are returning home, in addition to attending to the usual case loads seen by the available Nepalese physical therapists.

### Coordination of the Team Response

Prior to the earthquake, a disability workshop conducted in March 2015 among major stakeholders, including the Nepal Ministry of Health, World Health Organization, Handicap International, and

the Nepal Physiotherapy Association, resulted in the establishment of a disability and rehabilitation unit within the government health system. The leadership of this initiative, under the Ministry of Health, has now been tasked with coordinating the rehabilitation response to the earthquake. A rehabilitation subcluster system has been formed beneath the health cluster, with representatives from government health facilities, nongovernmental organizations, and foreign medical teams. These stakeholders have been mapping the injuries and rehabilitation needs following the earthquake and have overseen the recruitment of local physical therapists for the areas of identified need. In the early stages of the response, the subcluster played a key role in coordinating the response, avoiding duplication of efforts, and regulating international offers of support. A medium- to long-term rehabilitation strategy has been formalized and is now being implemented. Some of the significant events and plans that are being implemented include:

- Coordination between the nongovernmental health care providers and the government facilities
- The establishment of step-down rehabilitation facilities, where patients can either live for a period of time or can easily access the necessary medical care
- A physical therapy presence at district-level government hospitals with the opening of physical therapy posts
- The Nepal Physiotherapy Association and Handicap International have taken a lead in coordinating short-term positions for Nepalese physical therapists, specifically to work in the neediest districts at step-down facilities and in central locations in the affected areas
- Donated equipment has been stored in a central location and distributed on request by rehabilitation providers around the country. Crutches, splints, slings, braces, wheelchairs, and other orthotic devices are provided through this service based on identified needs

- An official identity card is being distributed to earthquake survivors with ongoing medical needs to allow free access to government health facilities
- Specialist training for local physical therapists has been requested and is being provided by foreign rehabilitation experts in the areas of spinal cord injury, psychological distress, and amputation
- Subgroups on spinal cord injury and amputation have coordinated the care of these complex patients, transferring patients with spinal cord injuries to specialist centers and establishing a rapid, locally led, and free-to-access prosthetics pathway for those with amputations

## Lessons Learned

- National and local disaster response plans that include rehabilitation professionals will save lives and optimize the provision of medical services. Organizations such as Handicap International and institutions such as Dhulikhel Hospital had specific earthquake disaster response plans that were known and could be immediately implemented, enabling efficient use of medical services for the greatest number of patients and immediate tracking of patients, ensuring they were not lost to follow-up.
- The national physical therapy professional association has an important role to play in mobilizing physical therapists and supporting the government in developing injury-management plans and policies.
- Coordination and strong leadership are essential at the government level, individual hospital level, and within physical therapy departments. The early establishment of a rehabilitation subcluster was critical to supporting this, and should be standardized for future responses.
- Disaster management requires a team response, with all health specialties, such as orthopaedic and trauma surgeons, physicians, nurses, phar-

cists, and therapists, working together.

- Coordination between the medical and rehabilitation teams at discharge is critical to ensuring continuation of care, especially for patients who have lost their home or live in remote locations.
- Do not underestimate the contribution of physical therapists in the acute response to a disaster. They should be ready to assist in the acute management of injuries as far as training and the local health system allow.
- Physical therapists are central to the planning and delivering of rehabilitation services in the medium to long term.

## Recommendations

Physical therapists should make themselves aware of disaster response plans in their organizations, and should play a role in risk assessments relating to hazards in their region. They should be involved in drafting response plans. National associations are well placed to support both national and local planning. MEDLINE has excellent resources that could form the basis for these plans,<sup>5</sup> and the World Confederation for Physical Therapy is currently developing a comprehensive briefing paper for physical therapists.

From our recent experience, in disaster-prone areas it is worth considering incorporating principles of acute trauma rehabilitation in disaster contexts into undergraduate physical therapy courses, with a particular focus on specialty areas such as the acute management of spinal injuries and amputees. Where relevant to scope of practice, it may also be appropriate to provide training in triaging of patients; first aid; basic life support; dressing of wounds; and application of plaster casts, temporary plaster backslabs, and slings. These basic skills may help a physical therapist contribute to a disaster response effort and could be beneficial in accident and emergency departments or in managing injuries in remote areas of the country.

## Moving Forward: Our Mission

In the days and weeks after the earthquakes, while we may have felt overwhelmed at times by this tragedy and its impact on the Nepalese people, we have also strengthened our resolve to continue to improve physical therapy and rehabilitation services in Nepal. ●

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