

Implementing a NeuroGym® Active Restorative Program in Eldercare

In recent years, there has been a paradigm shift with regard to how we view the inevitability of physical decline with aging and in our expectations of recovery of function after stroke. Neuroscience research has resulted in ample evidence of the plasticity of the human nervous system and physiologists continue to debunk the myths that significant muscle atrophy and the concomitant decline in motor ability are unavoidable¹⁻⁵. As a result of this paradigm shift, long term care facilities and eldercare programs are responding to the growing demand from residents, their families, and payers to improve restorative care and physical activation programs.

The challenge facing facility owners and managers is how to implement a program that will improve the physical abilities of residents in an environment of budget restraints and limited funding. To be cost effective, a restorative care program must result in measurable gains in the functional independence of residents, while not placing unreasonable demands on staff time and facility budgets. This application note describes how a select line of rehabilitative training equipment manufactured by NeuroGym Technologies Inc. can be used to create an effective restorative care program in an eldercare facility.

NeuroGym Technologies Inc. equipment developed out of a need for more effective training tools to enable the re-learning of motor skills after neurologic injury. The plasticity of the human brain means that with intensive, self-initiated practice, individuals can re-learn lost motor skills. In the case of elderly residents who have not suffered from neurologic injury or disease, the need to re-acquire motor skills, such as dynamic balance and improved gait, is usually as a result of immobility and the associated muscle atrophy and reduced range of motion. What is typically done in most facilities to improve the physical abilities of such elderly residents? Often, the elderly resident is assisted by one or more staff to walk up and down the hall for a few minutes a day. While this mobility activity is better than no activity, it is certainly far from optimal if the goal is to see measurable improvements in balance and speed of gait. Additionally, this activity is obviously not available to those who are not mobile enough to walk. The learning and re-learning of a motor skill like gait cannot occur if an individual is not able to experience the opportunity to actively try (and fail) repeatedly, and this cannot be done by simply going for a walk with the assistance of an aide. The NeuroGym line of equipment is designed to enable individuals to regain the strength, coordination, and motor abilities necessary to become more functionally independent⁶. From strength training devices, like the Ankle Trainer and Pendulum Stepper, to the Sit-to-Stand Trainer, Bungee Mobility Trainer and



NeuroGym TIMTrainer, the NeuroGym equipment can be used to create safe and functional restorative exercise programs for eldercare

PROGRAM COMPONENTS

To initiate a restorative physical training program, residents must be assessed as to their functional level and their requirements. In most facilities, this assessment is undertaken by a physical therapist. Barring any medical restrictions to increased activity, residents deemed suitable for inclusion in a mobility training program can begin participating at the level determined by the therapist. Restorative care staff can then carry out supervision of safe mobility training with the NeuroGym line of equipment.

A restorative paradigm of training in eldercare facilities assumes that a certain degree of mobility, strength and function can be restored with training. For the training paradigm to be effective, training needs to be regular (daily or every second day) in a training environment that enables the desired function – for example standing or walking. With select NeuroGym enablers, one restorative care employee can assist over 50 residents to train regularly and effectively. For example, the Sit-to-Stand routine would not exceed 10 minutes per user, and can be done at the user's bedside. Therefore, in 4-5 hours, that machine may be used to train 25 users – a routine that should be repeated every second day. And, unlike equipment that just passively assists residents to the standing position, training on the Sit-to-Stand Trainer is designed to actively improve the standing skill such that functional gains in this ability result.



Residents who seek walking/dynamic stability training similarly require 10-15 minutes each day in a Bungee Mobility Trainer. With two individuals supervised at the same time (either two Bungee Mobility Trainers or one Sit-to-Stand machine and one Bungee Mobility Trainer), the restorative care personnel can activate approximately 50 potential users in a span of 4-5 hours. In addition, dedicated lower extremity training devices such as the Ankle Trainer and the Pendulum Stepper may be employed in parallel to involve more users in ankle and leg strengthening. Such training can be completed from a chair or wheelchair.

The above scenario assumes the availability of 2-3 pieces of enabling equipment that could be stored and used in the corridors, if a gym room is not available, and 2-3 smaller strengthening devices that require minimal space. In summary, a modest investment in equipment and personnel should enable many facilities with a mandate or goal of restoring resident function, to implement a state-of-the-art program with tremendous potential.

PROGRAM BENEFITS

The benefits of enhancing and maintaining the functional mobility of elderly residents seem obvious, but difficulties in actually achieving these goals have not always been readily acknowledged. Too often physical restorative programs have been viewed as 'extras' that may be cut in times of budget constraints. This may have occurred because, in the past, achieving an effective program meant assigning financial and personnel resources that were prohibitive. Likewise, because making do with passive assistance to mobility and infrequent or less-than-intensive training led to minimal or no functionally measurable improvements, restorative physical re-training programs have not seemed essential. This attitude is quickly changing as new evidence continues to emerge about the importance of maintaining physical abilities as we age, and the amazing ability of the brain to re-learn lost motor skills.

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With the addition of a line of enabling equipment to meet the training challenges of the elderly population, NeuroGym Technologies Inc. can provide care facilities with the capacity to enhance the quality of life of their residents. The benefits to staff members, too, should not be overlooked. Restorative care aides are not just performing basic daily care, but are actively involved in providing interventions that help their residents regain or improve function. This may result in significant improvements in staff morale and help reduce staff turnover, one of the biggest problems for LTC facilities. From an economic point of view, more physically active, safely mobile residents are less likely to suffer from the complications of immobility. It has been estimated, for example, that the cost of a bedsores that might result from being immobile in bed, can reach \$70,000⁷. Obviously, eliminating even one such event will result in significant savings.

Implementing an active restorative care program not only makes good monetary sense, but also it is increasingly seen, from an ethical and healthcare standpoint, to be essential to quality care. The program, however, needs to adhere to best practice standards and that may require facility managers to revisit their current programs and make the necessary adjustments of equipment and personnel to ensure that restorative care is truly that – measurably improving the functional mobility and independence of residents.

REFERENCES

- 1 Cress ME, Buchner DM, Questad KA, Esselman PC, deLatuer BJ, Schwartz RS. Exercise: effects on physical functional performance in independent older adults. *J Gerontol A Biol Sci Med Sci.* 1999; 54(5): M242-8.
- 2 Chen R, Cohen LG, Hallett M. Nervous system reorganization following injury. *Neurosci.* 2002;111:761-773.
- 3 Host HH, Sinacore DR, Bohnert KL, Steger-May K, Brown M, Binder EF. Training-induced strength and functional adaptations after hip fracture. *Phys. Ther.* 2007 87(3): 292-303.
- 4 Krakauer, JT. Motor learning: its relevance to stroke recovery and neurorehabilitation. *Curr Opin Neurol.* 2006;19:84-90.
- 5 Nelles G. Cortical reorganization - effects of intensive therapy. *Restor Neurol and Neurosci.* 2004, 22:239-244.
- 6 www.neurogymtech.com
- 7 http://www.health.harvard.edu/press_releases/bedsores.htm

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