



Focused Symposium

Strength training in physical therapy[☆]

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Introduction

In an era characterised by an ageing population and a global epidemic of obesity and related comorbidities, daily habitual physical activity and exercise training with well-known health benefits are key elements to improve quality of life and functional capacity [1]. Muscular weakness exacerbated by physical inactivity is pervasive in ageing adults, and those with type 2 diabetes and coronary artery disease commonly demonstrate even greater losses of muscular strength. Evidence-based research increasingly supports the importance, safety and efficacy of strength training in the prevention and management of a range of chronic diseases.

A symposium presented at the recent World Confederation for Physical Therapy Congress 2015 in Singapore focused on different perspectives and key issues on advanced or emerging scope of practice in strength training in the field of physical therapy, with particular reference to ageing adults, obese and metabolically unhealthy subjects, and frail patients with coronary artery disease. The main aim was to provide an overview of the importance and effects of evidence-based strength exercise protocols in ageing adults. Secondly, the benefits of an active lifestyle for health, with a particular focus on strength training in patients with obesity, metabolic

syndrome and type 2 diabetes, and frail patients with coronary artery disease, were introduced.

Symposium debate

Muscular weakness in ageing adults can be treated effectively with proper exercise protocols and prescription; for example, in a classic study with nursing home residents, an increase in leg extensor strength of 177% was achieved in 8 weeks [2]. Unfortunately, too many therapists use strength exercise approaches that are not supported by research evidence, resulting in strength gains that are lower than would be expected. In the symposium, the top 10 points that every physical therapist needs to know about strength exercises in order to deliver safe, highly effective and clinically practicable strength exercises to ageing adults were presented. Detailed information regarding evidence-based programme design was also provided [e.g. details regarding the basic principles of progression expressed as progressive overload, specificity and variation in order to obtain better outcomes, greater satisfaction and less cost (US: ‘triple aim’)].

A ‘life course approach’ to muscle mass and strength showed that the focus should be on maintenance of peak muscle mass and strength during adulthood, and on minimising loss of strength to remain above the disability threshold in elderly subjects [3]. Maintenance of adequate muscular strength across the life span may be the most important factor in healthy ageing. This is particularly the case in the context of sedentary populations with overweight and obesity or sarcopenic obesity and type 2 diabetes [4]. It is also important to emphasise that strength training (or a combination

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of aerobic and strength training) for obese and metabolically unhealthy subjects may provide excellent health outcomes independent of weight loss. Benefits of strength training include decreased pain and discomfort, enhanced quality of life and self-efficacy, and cardiometabolic benefits.

With the ageing of society, the number of frail patients with coronary artery disease has increased. As frailty is a physiological state of increased vulnerability to stressors that results from decreased physiological reserves, strength training is essential for this population. Strength training is particularly effective in motor unit recruitment and rate coding, in addition to metabolic stress to stimulate the secretion of growth hormone. Power training has also been shown to be an effective method to enhance muscle power and functional performance [5].

Implications

Fruitful discussion reinforced the presentations, with numerous relevant questions (e.g. how to deal with oedema or muscle soreness or periodisation of training). In all communications, the importance of the professional expertise of physical therapists was stressed, along with individual exercise training with clear goal setting, recognition of the clinical status of patients, and relevant safety issues. In addition, the role of genetic factors as determinants of individual training responses was referenced. Finally, concurrent training with prescription of strength exercises before aerobic exercises or vice versa in the same exercise session was identified as an effective way to elicit various physiological adaptations simultaneously.

The current international research literature and guidelines related to healthy ageing, and the management of obesity and metabolic conditions and coronary artery disease in clinical practice support a combination of strength training and aerobic training. A combination of approaches is safe and should form part of the habitual daily routine, having an essential role and numerous functional benefits including decreased loss of fat-free mass associated with weight loss, improved maintenance of weight loss and improved cardiometabolic health, independent of weight loss. At an individual level, sound muscular strength and endurance contribute to a better quality of life, with self-efficacy being a critical element. The role of the physical therapist is important in facilitating the transfer of this message into clinical practice and, especially, action.

Conflict of interest: None declared.

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