

Comments on “A Survey of Fellowship-Trained Upper Extremity Surgeons on Treatment of Lateral Epicondylitis”

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To the Editor:

I read carefully the recently published article “A Survey of Fellowship-Trained Upper Extremity Surgeons on Treatment of Lateral Epicondylitis.”¹² I would like to comment the following:

Lateral elbow tendinopathy (LET) seems to be the most appropriate term to use in clinical practice because all the other terms, such as lateral epicondylitis, lateral epicondylalgia, lateral epicondylosis, and/or tennis elbow, make reference to inappropriate etiologic, anatomic, and pathophysiologic terms.²⁰ LET is one of the 2 most common tendinopathies of the upper limb. LET is defined as pain in lateral epicondyle²⁰ and is characterized by disorganized collagen, an increased presence of fibroblasts, the absence of prostaglandins, and inflammatory cells.²⁰ Thus, this condition is degenerative (failed healing tendon response) and not inflammatory as originally thought.³ Diagnosis is reproduced by pain with palpation (eg, localized pain), specific and clinical tests.^{3,4} However, the appropriate treatment for the rehabilitation of LET does not exist. A conservative approach is advocated by many clinicians.⁴ Therefore, physical therapy is usually proposed. A plethora of physiotherapy modalities has been recommended for the management of LET such as exercise programs, manual techniques, physical modalities, external support, and soft tissue manipulation.⁴ The mechanism of action of the above treatments is different, but all improve function and decrease pain. Such a plethora of techniques suggests that the ideal management strategy is unknown, and further research is required to find the most effective treatment strategy in LET patients.

The most common physiotherapy treatment for LET is a supervised or in-clinic exercise program.⁵ Systematic review¹⁴ and randomized controlled trial¹³ favor eccentric training over other types of contractions in the management of LET. However, eccentric strengthening of the “problematic” only tendon needs to be stopped.²¹ Rehabilitation of tendinopathies such as LET is changing and now eccentric training is not the only exercise option.

Eccentric training of the injured tendon (extensor carpi radialis brevis [ECRB] for LET) is combined with static

stretching exercises of the injured tendon in the treatment of tendinopathies. Studies^{10,22,24} have shown positive results in the treatment of LET using eccentric training of the injured tendon as first recommended by Alfredson et al in 1998¹ and static stretching exercises of the injured tendon as first proposed by Stanish et al in 1986.¹⁶

Malliaras and his colleagues⁸ performed a systematic review of studies comparing 2 or more loading programs in Achilles and patellar tendinopathy. They concluded that clinicians should consider eccentric-concentric loading alongside or instead of eccentric loading. A heavy slow resistance (HSR) program is recommended in the management of lower limb tendinopathy.^{2,7} The HSR program produced equivalent pain and function improvement (Victorian Institute of Sports Assessment [VISA]) than the Alfredson eccentric program, but significantly better patient satisfaction at 6-month follow-up. This clinical improvement was accompanied by increased collagen turnover in the HSR group. In the Achilles tendon, eccentric and HSR have recently been shown to yield similar clinical outcomes (VISA and patient satisfaction) at 1-year follow-up. Based on the above findings, the HSR program can be recommended as an alternative to the Alfredson eccentric program lower limb tendinopathy rehabilitation. Stasinopoulos and Stasinopoulos²³ showed positive effects of such an exercise program in the management of LET. However, further studies determining the effectiveness of such as exercises in LET are needed.

Martinez-Silvestrini et al¹¹ stated that, unlike Achilles tendinopathy, LET is often related to forceful grip activities requiring isometric contraction, which would be more beneficial than eccentric contraction in LET. Recently, isometric exercises have been recommended to reduce and manage tendon pain increasing the strength at the angle of contraction without producing inflammatory signs.⁹ It is found that 70% of maximal voluntary contraction have been shown to

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reduce tendon pain for 45 minutes post exercise, and this was also associated with a reduction in motor cortex inhibition of the tendon that was associated with tendinopathy.¹⁵ The dosage of isometric contractions at the present is based on clinical experience,^{9,15} and their effect on pain in patients with LET requires further study. A case study showed that the combination of eccentric training with isometric contraction had positive effects in LET.¹⁷ Finally, the eccentric-concentric training combined with isometric contraction and static stretching exercises reduced the pain and improved the function in LET patients.²³ Therefore, it was hypothesized that the simultaneous use of these 2 kinds of contractions (isotonic and isometric) and static stretching exercises will further enhance the analgesic effect of contractions in the treatment of LET, increasing the arm function but future well-designed studies are needed to confirm the results of the last 2 trials.

In LET, not only the ECRB (injured tendon) but also the supinator may be involved.²⁰ The exercise program should include exercises not only for ECRB strengthening but also for supinator strengthening.¹⁹ In addition, rotator cuff and scapular muscles strengthening is also needed.¹⁸ Based mainly on clinical experience, supinator, rotator cuff, and scapular muscles weakness in LET patients is commonly addressed as increasing pain, and decreasing functional ability and hand-grip strength. This means that the causes of LET may not be limited to the ECRB. Functional impingement of the supinator, rotator cuff, and scapular muscles due to altered joint mechanism and muscle imbalance can impair the stabilization of the elbow resulting in overcompensation of the ECRB. This may lead to micro trauma of the soft tissue structures present at the lateral epicondyle, thus causing symptoms of LET.^{18,19} It is reasonable that enhancements with gripping might have happened from a blend of enhanced motor control and upgraded muscular power of the supinator, rotator cuff, and scapular muscles. Changes in the supinator, rotator cuff, and scapular muscles may lead to altered and compensatory changes in the ECRB that may overload the ECRB during repetitive movements, thus causing symptoms of LET.^{18,19} Using supinator, rotator cuff, and scapular muscles strengthening loading, usual motion might have been returned, resulting in resolution of pain with actions and a return to painless gripping for the patient.

Therapists use techniques to improve symptoms (pain and function) while LET patients have also reduced proprioception.⁶ Unfortunately, therapists ignore the reduced proprioception in the management of LET. If therapists use modalities to improve the proprioception, the results will be effective sooner. However, more research is needed to find out the factors for the development and progression of proprioception in LET patients. In addition, future studies are needed to investigate which treatment is the most effective to increase LET proprioception and if this treat-

ment is effective for all LET patients' for example LET patients with neck stiffness or patients with acute LET will have benefit from proprioception training. More research is also needed to find out which joint, wrist, elbow, or shoulder, has poor proprioception in LET patients and how this reduced proprioception affects the management of LET. Finally, further trials are needed to clarify whether reduced proprioception plays a role in the development of LET, the progression of the degenerative changes found in LET, and in the large recurrence rate of LET.

Concentric-eccentric, stretching-eccentric, isolated eccentric, and recently isometric loading may be recommended based on factors such as site of tendinopathy, access to equipment, age, function, pain, etc.²¹ The tendinopathy management should be based on a progressive loading of the upper extremity (kinetic chain), muscle-tendon unit, and tendon itself. However, the optimal protocol of exercise training needs to be investigated. A progressive loading exercise program should be recommended as a treatment approach in the rehabilitation of LET, but further research is required to find the ideal protocol of exercise program.

Finally, electrotherapeutic modalities, manual therapy techniques, soft tissue release maneuvers, bracing/taping/Kinesio Taping, and acupuncture have also been recommended in the management of LET. There is minimal experimental evidence to support the efficacy of the use of the above approaches for the management of LET.⁵ The above recommended therapies do not use as a substitute for exercise but as a supplement to exercise program because all these treatments do not reverse the pathology of LET but they can improve the symptoms of LET. Further research is needed to find out which treatment strategy, if exists a treatment strategy, combined with progressive exercise training will provide the best results in the rehabilitation of LET.

In writing this editorial, it is not my intention to increase the knowledge of physiotherapists but to generate questions about the treatment protocol for the management of LET. It is believed that even if an exercise program is found for the management of LET, this program will not be used as a sole treatment. This program will be combined with other physiotherapy approaches such as physical modalities, acupuncture, and/or external support.

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