AMJ Australasian Medical Journal [AMJ 2017;10(1):63–65]

Tendinopathy: The role of stretching

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EDITORIAL

Please cite this paper as: Stasinopoulos D. Tendinopathy: The role of stretching. AMJ 2017;10(1):63–65.
https://doi.org/10.21767/AMJ.2017.2840

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One of the most common sports/ musculoskeletal injuries are tendinopathies. A plethora of electrotherapeutic and non-electrotherapeutic physiotherapy modalities has been proposed for the management of tendinopathy. The recommended treatments intend to improve function and reduce pain in tendinopathy. However, these treatments act in a totally different mechanism of action. At present, the most common and effective conservative approach in the rehabilitation of tendinopathy is the eccentric exercise program.[1] However, many patients with tendinopathies do not respond to eccentric training alone.[2] Thus, eccentric exercises are combined with static stretching exercises for the management of tendinopathies with positive results.[3–9]

The definition of static stretching is to place the muscle-tendon unit in a maximal position of stretch slowly and sustaining it there for an extended period of time.[10] The moderate discomfort and/or pain that the patient experiences determine this maximal stretching position.[11] Patient feedback as to the discomfort and/or pain experienced during the procedure determine the static stretching exercises. Performing the static stretching slowly it is impossible for the stretch reflex that causes contraction of the muscle tendon unit, instead of relaxation, to be stimulated. Furthermore, the resistance of the muscle tendon unit in slow static stretching is less than in a quick static stretching because the muscle tendon unit is a viscoelastic structure which results in its elongation. Static stretching exercises are advocated by therapists not for all tendons in the anatomic region but only for the "injured" tendon.

The optimal time for holding this stretching position varies. It is recommended for a range of as little as 3 seconds to as much as 60 seconds.[12] It is believed that the most effective time period for increasing tendon flexibility is a stretch for 30–45 seconds.[10,11,13,14] Several studies have indicated that holding a stretch for 30–45 seconds is the most effective for increasing tendon flexibility.[15–18] Stretches lasting for longer than 45 seconds seem to be uncomfortable for patients without better results.[15–18] This time period is sufficient for the Golgi tendon organs to begin responding to the increase in tension. The impulses from the Golgi tendon organs can override the impulses coming from the muscle spindles, allowing the muscle tendon unit to reflexively relax after the initial reflex resistance to the change in length.[19] Lengthening the muscle tendon unit and allowing it to remain in this position for more time than usual, is unlikely to produce any injury to the muscle tendon unit. This time period was followed in previously published trials on tendinopathies.[3–8]

Several times per treatment session a static stretch should be repeated, because it was found that after the fourth repetition of a static stretch more than 80 per cent of a muscle-tendon unit length can be obtained,[20] although the greatest increase in muscle-tendon unit length is obtained by the first stretch repetition.[10,19,21] Researchers claim that in each treatment session there should be performed 6 repetitions of static stretching exercises, dividing into three repetitions before and three repetitions after the eccentric program.[11,13,14] This approach of static stretching has been used in the majority of previously published trials. Physicians recommend a 15–45-second interval between each repetition.[10,21]

Logically, the flexibility of the muscle-tendon unit would increase, increasing tissue temperature before stretching;

however, a lot of physicians consider that stretching without or with a warm-up yields similar results.[20] Therefore, the home exercise programmes for the rehabilitation of tendinopathies were used without a warm up in previously published studies.[3–8]

It has also been recommended that the positive effects of exercise training for tendon management may also be contributing to the effect of static stretching, with a "lengthening" of the muscle-tendon unit, orientation of the new collagen fibres and subsequently less stress exerted during joint movement.[22] Stretching may strengthen the tendon or make it more resistant to strain and increase the range of motion of the relevant joint.[9,11]

Tendon stretching is an important factor in the rehabilitation of patients with tendinopathy and must be included in the rehabilitation program.

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PEER REVIEW

Peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

FUNDING

None