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Complete List of Authors:	Heales, Luke; Central Queensland University, Department of Health and Exercise Science Lastella, Michele; Central Queensland University, Appleton Institute for Behavioural Science Coombes, Brooke; University of Queensland, Health and Rehabilitation Sciences Vicenzino, Bill (Guglielmo); University of Queensland, Physiotherapy
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STRETCHING THE EVIDENCE BEHIND TENNIS ELBOW: MOBILE APP USER GUIDE

Luke J Heales^{1,3}, Michele Lastella², Brooke K Coombes³, Bill Vicenzino⁴

¹ School of Health, Medical and Applied Sciences, Central Queensland University, Rockhampton, Australia;

² Appleton Institute for Behavioural Science, Central Queensland University, Adelaide, Australia;

³ School of Biomedical Sciences, University of Queensland, Brisbane Australia;

⁴ School of Health and Rehabilitation Sciences, University of Queensland, Brisbane, Australia

Corresponding Author:

Luke Heales
Central Queensland University
Department of Exercise and Health Science
School of Health, Medical, and Applied Sciences
Rockhampton, QLD 4701, Australia
l.heales@cqu.edu.au @luke_heales

Key words: Tennis elbow, treatment, stretching, strengthening

NAME OF THE MOBILE APPLICATION

Tennis Elbow

CATEGORY OF THE MOBILE APPLICATION

Health and Fitness

PLATFORM

iOS version 6.0 or later; Android version 2.3 or later

COST

iPhone \$5.99 AUD; Android \$5.99 AUD

ABOUT THE APP

Tennis elbow (TE), formally known as lateral epicondylalgia, is a musculoskeletal condition associated with pain over the lateral elbow and histological changes of the common extensor tendon[1]. Numerous treatments are advocated for this condition, with recent developments in the use of mobile technology now added to the list.

The application, titled '*Tennis Elbow*', is one of the few user-friendly applications incorporating: education, a stretching program, and a diary for recording symptoms and exercises undertaken. The rationale provided for the aetiology of TE is muscle shortening from overuse and "The magic formula is now called stretch the flexors!" (Figure 1). The application recommends five stretching exercises, targeting muscles of the trunk and upper limb (e.g. finger flexors, wrist extensors). It allows users to track the number of exercises performed and their pain intensity using a user-friendly, colour coded rating scale (Figure 2). This information, along with a timer to count the duration of exercise, may assist the user to monitor their progress and compliance with stretching.

A notable concern with this application is the lack of scientific evidence. The applications rationale for the intervention is that TE is secondary to muscle shortening from overuse, however there is currently no published evidence of muscle shortening in TE. Although stretching has been shown to reduce pain in a variety of musculoskeletal conditions[2], this treatment does not address the primary impairment of weakness during gripping, the key feature of TE. On the contrary, the recommended stretches may cause a

reduction in strength[2], and an altered neuromuscular control[2]. The application collects data on pain intensity to generate instruction on how many repetitions should be performed the following day, with greater symptoms indicating that more exercise is necessary (Figure 2). However, the rationale that greater symptoms be treated with more stretching should be approached with caution.

USE IN CLINICAL PRACTICE

Evidence from a randomised controlled trial suggests that strengthening is more effective at reducing pain and improving grip strength than stretching, although both groups improved[3]. Given the lack of evidence for muscle shortening in TE and stretching as a treatment, it is difficult to endorse stretching as an isolated treatment using the prescribed exercises or doses provided within this application.

Due to heterogeneity in the pathophysiology and clinical presentation of TE, one treatment is unlikely to be effective in all cases[1]. Using a recently published algorithm for the management of TE[1], this application might benefit a low-risk subgroup of individuals who have relatively mild pain and disability, without additional risk factors for poorer prognosis (e.g. concurrent neck/shoulder pain). For such individuals, it is recommend a health practitioner provide an individualised intervention. Overall this user-friendly application may provide a reasonable framework for assisting some individuals in managing and monitoring their condition.

PROS:

- The application provides exercises to individuals with TE and encourages reflection upon causative factors and advice to remain active but avoid excessive exertion, which is consistent with guidelines.
- Users can track their pain intensity on a daily basis.
- The application acknowledges that stress may lead to increased muscle tension and symptoms of TE, offering suggestions for stress-relief.
- In the Terms and Conditions section, the app provides information in regards to ceasing the stretching exercises and seeking medical advice should there be ongoing

symptoms, deterioration of symptoms, or new complaints of any kind, which is consistent with guidelines.

CONS:

- Cost
- The application provides limited and unsubstantiated information about the condition, which is not supported by the literature (e.g. stating muscle shortening is the cause of TE).
- The application only prescribes stretching exercises and does not include active strengthening which is not consistent with guidelines.
- The application uses inaccurate terminology (e.g. “strecker muscles”) and contains several grammatical errors, which limits the clarity of information provided.
- It is unclear whether the recommended number of exercises is for all five stretches (e.g. 6 recommended exercises x all 5 stretches = total of 30 stretches).

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LH and ML contributed to the concept, design and write up of the manuscript. BKC and BV contributed to the review and editing of the manuscript.

COMPETING INTERESTS:

None declared. This work is not commissioned.

Figure 1. Screenshot of the proposed tightening of the flexor muscles.

198x352mm (300 x 300 DPI)

Figure 2. Screenshot of an individual tracking the intensity of their complaint (i.e. pain intensity) using the colour coded rating scale, which is used to recommend the number of exercises. The user can also track the number of exercises performed.

198x352mm (300 x 300 DPI)