



Research

Kinesio Taping does not improve the symptoms or function of older people with knee osteoarthritis: a randomised trial

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KEY WORDS

Bandages
Knee injuries
Muscle strength
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ABSTRACT

Question: Does Kinesio Taping reduce pain and swelling, and increase muscle strength, function and knee-related health status in older people with knee osteoarthritis? **Design:** Randomised, controlled trial with concealed allocation, intention-to-treat analysis and blinded assessment. **Participants:** Seventy-six older people with knee osteoarthritis. **Intervention:** The experimental group received three simultaneous Kinesio Taping techniques to treat pain, strength and swelling. The control group received sham taping. All participants kept the taping on for 4 days. **Outcome measures:** The outcomes were: concentric muscle strength of knee extensors and flexors, measured by isokinetic dynamometry with an angular velocity of 60 deg/second normalised for body mass [(Nm/kg) × 100 (%)]; pressure pain threshold via digital pressure algometry (kgf/cm²); lower-limb swelling via volumetry (l) and perimetry (cm); physical function via the Lysholm Knee Scoring Scale (0 = worst to 100 = best); and knee-related health status via the Western Ontario and McMaster (WOMAC) osteoarthritis index (0 = best to 96 = worst). Outcomes were measured at Day 4 (end of the taping period) and Day 19 (follow-up) after the start of the treatment. **Results:** At Day 4, there were no significant between-group differences for knee extensor muscle strength (MD -1%, 95% CI -7 to 5), knee flexor muscle strength (MD 2%, 95% CI -3 to 7), the pressure pain threshold at any measured point, volumetry (MD 0.05 L, 95% CI -0.01 to 0.11), perimetry at any measured point, Lysholm score (MD -4 points, 95% CI -9 to 2), or WOMAC score (MD -2 points, 95% CI -8 to 4). The lack of significant between-group difference was also seen at the follow-up assessment on Day 19. **Conclusion:** The Kinesio Taping techniques investigated in this study provided no beneficial effects for older people with knee osteoarthritis on any of the assessed outcomes. **Trial registration:** Brazilian Registry of Clinical Trials, RBR-36r3t5. [Wageck B, Nunes GS, Bohlen NB, Santos GM, de Noronha M (2016) Kinesio Taping does not improve the symptoms or function of older people with knee osteoarthritis: a randomised trial. *Journal of Physiotherapy* 62: 153–158]

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Introduction

Some musculoskeletal diseases that are commonly seen as part of the ageing process may lead to important functional limitations in the older population; osteoarthritis is one of the main examples.¹ Knee osteoarthritis is associated with joint and muscle dysfunction, with consequent impairment in balance and gait.^{2,3} These impairments are often seen along with pain, swelling, crepitation, decreased range of movement, joint laxity, presence of osteophytes and changes in the congruence of the joint surfaces.^{1,3–5}

The clinical progression of knee osteoarthritis is associated with several factors, one of which is a decrease in quadriceps strength.^{6,7} Therefore, strengthening of these muscles is usually one of the main aims in the treatment of knee osteoarthritis. However, the pain associated with knee osteoarthritis can be a limiting factor for strengthening. If pain reduces adherence to strength training, this

could lead to a further decrease in muscle strength, resulting in more pain, with the process becoming a vicious cycle of pain-weakness-pain.⁸ This process is usually accompanied by a decrease in joint function, which in turn leads to difficulties with activities of daily living and a decrease in quality of life.⁴ Therefore, pain relief and functional improvement must be one of the main objectives when treating knee osteoarthritis.⁴ According to Jevsevar,⁵ pharmacological and invasive interventions for osteoarthritis are typically incompletely effective, have some potential adverse side effects, and/or have effectiveness that is not comprehensively established.⁵ Thus, non-pharmacological treatments for the symptoms (mainly pain) should be further investigated.

Among the different modalities used in physiotherapy to treat knee osteoarthritis, the application of taping has gained popularity,^{5,9} with several possible techniques. The Kinesio Taping technique has been seen in clinical practice, despite a lack of high-quality studies supporting its efficacy.¹⁰ Nevertheless, some

isolated studies have presented results that give clinicians and researchers some encouragement in the use of Kinesio Taping. Vithoulkaa et al reported that Kinesio Taping could increase the torque generated by the quadriceps in women without knee pain.¹¹ Campolo et al showed a reduction in pain due to Kinesio Taping during functional activities in people with patellofemoral pain.¹² The Kinesio Taping application, with its varied application techniques, could therefore be beneficial in treating people with knee osteoarthritis.

Therefore, the research question for this randomised, controlled trial was:

Does Kinesio Taping reduce pain and swelling, and increase muscle strength, function and knee-related health status in older people with knee osteoarthritis?

Method

Design

This was a randomised clinical trial in which participants were allocated to either the experimental group, which received three simultaneous Kinesio Taping applications, or the control group, which received a single sham Kinesio Taping application. Potential participants were screened to determine eligibility before baseline assessment and randomisation to an intervention. Randomisation was performed using individual allocation codes placed within opaque, sealed envelopes by a person having no contact with the participants and assessors. Participants of both groups were instructed to keep the Kinesio Taping on the skin for 4 days and on

the fourth day, after removal of the Kinesio Taping, all participants were again assessed by an assessor who was blinded to group allocation. A third assessment was performed 15 days after the second assessment (Figure 1).

Participants, therapists and centres

Older people with a clinical diagnosis of tibiofemoral osteoarthritis were recruited via outpatient clinics in a state capital of Brazil to take part in this study. Inclusion criteria were: minimum age of 60 years, minimum pain of 4/10 on a visual analogue scale, knee joint stiffness during standing activities, stiffness that had been present for at least 6 months at screening, pain during passive mobilisation of the knee, intermittent swelling, and radiographic signs of joint degeneration. Any grade of the Kellgren-Lawrence scale was permissible. Exclusion criteria were: systemic rheumatic diseases, history of surgery in the affected limb, presence of any other injuries in the affected limb (bone, muscle or skin), history of skin allergy, and any other condition that could affect assessments. For participants with bilateral knee osteoarthritis, the most affected side was used, according to the visual analogue scale of pain.

Intervention

The experimental group received three Kinesio Taping elements (Figure 2A–C) applied simultaneously (Figure 2D). This advanced application with multiple layers of Kinesio Taping is indicated when more than one effect of taping is desired.¹³ Kase et al¹³ suggested the use of advanced applications for diverse injuries

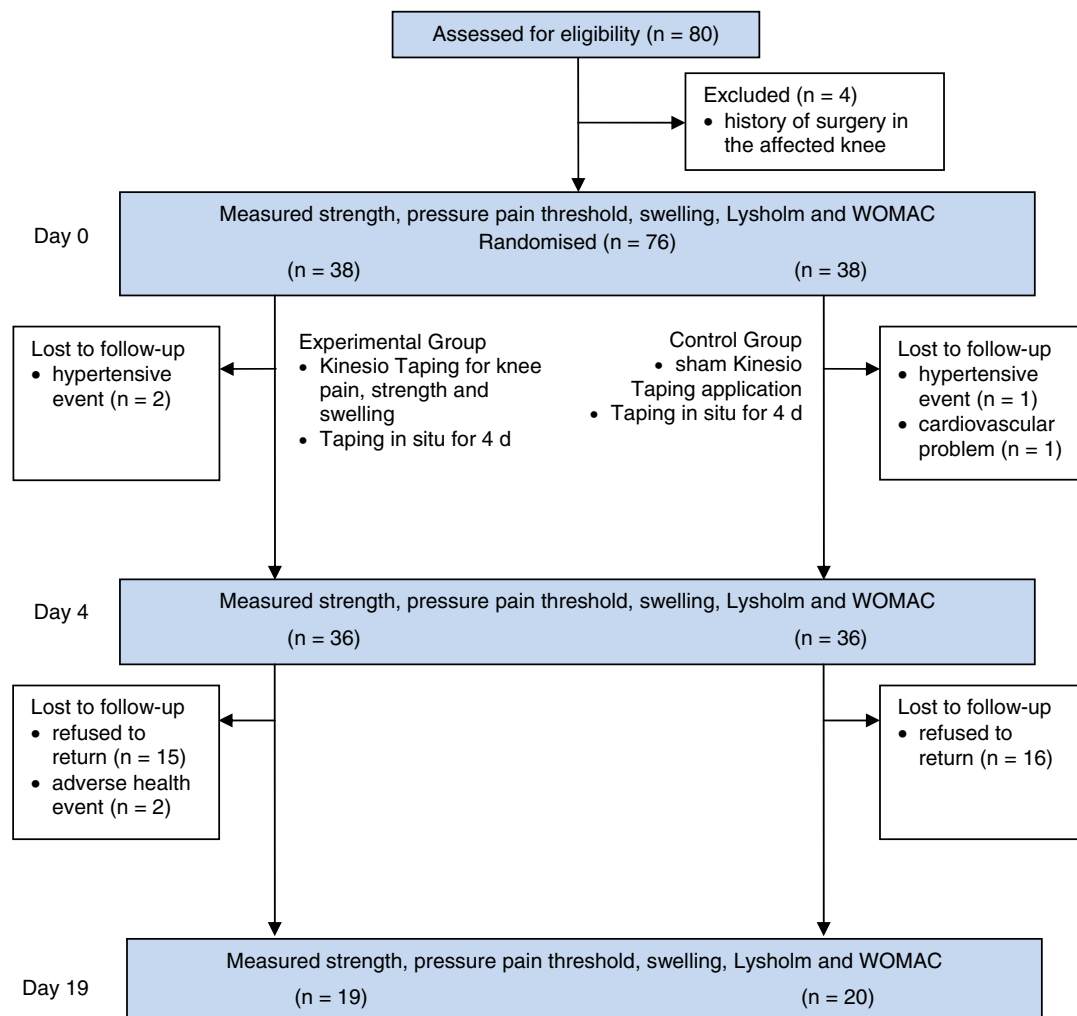


Figure 1. Flow diagram.

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