

Research article

Ankle taping does not impair performance in jump or balance tests

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Abstract

This study aimed to investigate the influence of prophylactic ankle taping on two balance tests (static and dynamic balance) and one jump test, in the push off and the landing phase. Fifteen active young subjects (age: 21.0 ± 4.4 years) without previous ankle injuries volunteered for the study. Each participant performed three tests in two different situations: with taping and without taping. The tests were a counter movement jump, static balance, and a dynamic posturography test. The tests and conditions were randomly performed. The path of the center of pressures was measured in the balance tests, and the vertical ground reaction forces were recorded during the push-off and landing phases of the counter movement jump. Ankle taping had no influence on balance performance or in the push off phase of the jump. However, the second peak vertical force value during the landing phase of the jump was 12% greater with ankle taping (0.66 BW, 95% CI -0.64 to 1.96). The use of prophylactic ankle taping had no influence on the balance or jump performance of healthy young subjects. In contrast, the taped ankle increased the second peak vertical force value, which could be related to a greater risk of injury produced by the accumulation of repeated impacts in sports where jumps are frequently performed.

Key words: Biomechanics, proprioception, force platform, ground reaction forces, center of pressure.

Introduction

Ankle sprains represent from 38 to 50% of the total sport injuries (Jones et al., 2000; Leaf et al., 2003; Thacker et al., 1999; Verbrugge, 1996). Garrick and Requa (1988) estimated that one-sixth of the total time lost by sport injuries was attributed to ankle sprains. Functional taping and ankle braces are passive preventive measures frequently utilised in sports (Osborne and Rizzo, 2003; Robbins and Walked, 1998). Studies on the influence of functional taping on sports tasks during actual competition are scarce (McCaw and Cerullo, 1999; Riemann et al., 2002), and most of them only analyse the passive ROM restriction (Hume and Gerrard, 1998). The studies that analyse jump tests and static balance are the most common among those that assess the influence of ankle taping on performance tasks in sports (Hume and Gerrard, 1998; Cordova et al., 2002). Research that studied jump performance focused on the changes in jump height with taped subjects (Burks et al., 1991; Mackean et al., 1995; Verbrugge, 1996). Some of them reported decreases in jump performance (Burks et al., 1991; Mackean et al., 1995; Verbrugge, 1996), but this remains a controversial issue.

In addition, a few studies have analysed drop landings and functional taping (McCaw and Cerullo, 1999; Riemann et al., 2002), showing decreases in the time to dissipate landing forces and adverse effects on the landing kinematics. The risk of 'overuse' injuries will increase if the ability to reduce landing forces is impaired by limiting the mobility of the lower extremities (Dufek and Bates, 1991; Hewett et al., 2005).

The studies on balance have focused on the centre of pressure (COP) trajectories to evaluate performance (Bennell and Goldie, 1994; Cordova et al., 2002; Feuerbach and Grabiner, 1993; Hertel et al., 1996; Kinzey et al., 1997; Paris, 1992). Better performance is shown by shorter trajectories or narrower areas of the COP. Nonetheless, some authors have utilised less accurate methods to evaluate balance, such as counting the number of times the subject needed to keep his balance (Bennell and Goldie, 1994), or the time spent by the subject on a fixed bar (Paris, 1992). There are contradictory results on the influence of preventive ankle taping on balance tests. Hertel et al. (1996) found no differences between subjects with and without taping in three balance tests. One of them was performed with static monopodal stance and the other two were dynamic tests. However, other authors such as Bennell and Goldie (1994) concluded that ankle taping led to a decreased postural control in similar balance tests.

Therefore, studies on the effects of ankle taping during specific movements, such as jumps or balance tasks, are scarce, and its influence on sports performance is controversial. The present study analysed the changes in ground reaction forces and the path of the COP during balance tests. The performance of taped subjects during static and dynamic balance tasks could be improved by the increase in exteroceptive input provided by the taping (Feuerbach and Grabiner, 1993). From previous studies, we hypothesised that prophylactic ankle taping on uninjured subjects would decrease their jump performance and increase the peak vertical forces during the landing phase. On the other hand, we expected an increase in the subjects' performance in the balance tasks, especially in the static balance tests. More biomechanical research on the effects of functional taping on sports performance is necessary to clarify its effects during actual sports tasks. Therefore, the research question of this study was: does prophylactic ankle taping influence on performance of two balance tests (static and dynamic balance) and the push off and landing phase of one jump test?