SHORT-TERM EFFECTS OF ELASTIC TAPING ON DANCER'S POSTURAL CONTROL PERFORMANCE

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Abstract. It was explored whether three different applications of elastic tape on the lower limbs of active, healthy dancers influence their postural control performance. 15 active, healthy dancers randomly performed demi-pointes and sissone ouvertes on a force platform in four experimental conditions: 1. no tape application, 2. ankle joint tape application, 3. leg muscle tape application, and 4. control tape application. Four kinetic parameters were calculated in order to represent postural control performance: 1) variable error of force magnitude in forward-backward direction, 2) variable error of force magnitude in side to side direction. 3) peak impact force during landing phase and 4) episodes of overall duration. Results revealed a task-dependent performance-enhancing effect and an application-specific performance-influencing effect concerning vertical ground reaction force measurements. It is concluded that the application of elastic tape for healthy, active dancers may on the one hand enhance parameters of postural control, whereas the same elastic tape application may hamper other performance related aspects of typical modern and classical ballet dance routines. Conflicting scientific results may thus indicate that generalized effects are controversial and positive influences in one specific characteristic can induce a decrease in another performance influencing characteristic.

Key words: kinesiotape, postural control measurements, force platform, athletic performance

Introduction

When watching professional dancers perform their routines it becomes apparent that next to artistry, technique and expression the dancer's ability to remain in equilibrium is of significant importance concerning performance quality. Especially in modern and classical ballet dance one-legged standing positions, requiring extraordinary foot positioning, like for example (demi-)pointe and turnout, are fundamental in early stages of learning because they occur on each skill level (Messerer and Brainsky 2007; O'Loughlin et al. 2008). Postural control in general is affected by the functional level of the sensorimotor system when executing complex skills (Riemann et al. 2002a).

The technical refinements of various modern and classical ballet dance routines require special demands on the dancer's sensorimotor system and thus challenge dancer's ability of postural control.

Stability, range of motion and muscle performance characteristics of the lower limb enable the dancer to perform to his/her potential or, in contrast, may hamper performance when being restricted due to harm or injury (O'Loughlin et al. 2008). O'Loughlin and colleagues (2008) therefore call for specific considerations like taping and strength training of the lower limb muscles, to prevent and/or treat typical dance specific harm or injuries of the lower limb, like for instance ankle instability and/or ankle sprains. Elastic tape straps applied on dancer's lower limbs may be able to meet these requirements. While the primary aim in using elastic tape straps is to support muscle functioning when injured, or in case of restricted functioning, these tape straps may also be used in terms of prevention, or even enhancement when muscle functioning is not restricted (Kumbrink 2012). Therefore, one could speculate that the application of elastic tape straps may have a positive influence on dancer's ability of postural control. The aim of this study was to explore the effects of elastic taping on healthy dancer's postural control performance.

Several conceptualizations for the cotton elastic tape straps are common in particular, and in sport science and related fields in general. These conceptualizations are kinesio tape (O'Sullivan and Bird 2011), kinaesthetic tape (Bassett et al. 2010), and elastic tape (Huang et al. 2011). There are also specific brand names, such as Kinesio® Tape, K-Tape®, Kintex™, or alike. The term elastic tape is used in this manuscript, referring to tape straps that can be stretched in longitudinal length up to 120–140% of their original length, and shorten after they were attached to the skin (Halseth et al. 2004).

In sport prevention and rehabilitation elastic taping is hypothesized to support function and performance in manifold areas like for instance dealing with pain, blood and lymph flow, sensory perception, as well as joint, muscle, and fascia functioning (Kase et al. 2003). However, a clinical relevance of elastic taping on pain reduction (shoulder and neck), scapular kinematics, muscle strength, electromyographic activity, or cervical range of motion, could not be demonstrated in a systematic review on the use and treatment efficacy of elastic taping. It was argued that the relevant studies failed to report significant effects, mainly due to insufficient methodological quality (Bassett et al. 2010). Williams and colleagues (2012) conducted a meta-analysis concerning the effectiveness of elastic taping in treatment and prevention of sport injuries, thus indicating that elastic taping could have a small, yet beneficial effect on muscle strength. However, Bicici and colleagues (2012) failed to affect functional performance in basketball players with chronic inversion ankle sprains when elastic tape was applied on player's ankles.

The current empirical results concerning performance related effects of elastic taping in healthy subjects are also conflicting. Positive effects of elastic taping applied on participant's lower limb were for instance found when measuring relative peak torque changes of the vastus medialis muscle via transdermal electromyography (Slupik et al. 2007), vertical ground reaction force during vertical jumping (Huang et al. 2011), height of flight when performing a vertical jump (Mostert-Wentzel et al. 2012), dynamic postural control (Nakajima and Baldridge 2013) and stiffness of the ankle (Fayson et al. 2013). Furthermore, no or even contradictory effects of elastic taping where found when measuring isokinetic muscle strength of the anterior and posterior thigh (Fu et al. 2008), isokinetic quadriceps femoris muscle strength, lower limb performance and subjective perception of strength (Vercelli et al. 2012), reproduction of ankle joint sense (Halseth et al. 2004), tensiomyographic response of vastus lateralis and medialis muscles, maximum power output, performance of counter movement jump and 10-m-sprint (de Hoyo et al. 2013) as well as during measurements of vertical and horizontal jumping performance (Nunes et al. 2013), dynamic balance (Hettle et al. 2013; Nakajima and Baldridge 2013; Nunes et al. 2013), and time to stabilisation after one-legged hops (Fayson et al. 2013).

Methodological differences between the studies just mentioned, such as differences in tape application procedures, recruited participants, measurement procedures, or empirical tasks might in part explain inconclusive evidence concerning performance related effects of elastic taping. Given that for instance elastic taping is likely to influence postural control (Fayson et al. 2013; Nakajima and Baldridge 2013) at least two questions arise: First, does the hypothesized effect of elastic taping depend on the kind of the postural control task, namely the demi-pointe and the sissone ouverte? Second, does the hypothesized effect of elastic taping depend on the tape application area and/or procedure? In order to address these questions, the aim of this study was to explore whether three different applications of elastic tape on the lower limb of active and healthy dancers (e.g., ankle joint tape application vs. leg muscle tape application vs. control tape application at sole of foot) may have a positive influence on their postural control performance in two different dance specific postural control tasks.

It was hypothesized that the elastic tape application on dancer's lower limb influences postural control performance. Additionally it was hypothesized that this effect may or may not depend on the postural control tasks, namely the demi-pointe and the sissone ouverte. The influence of a control tape application was explored. In this tape application condition elastic tape was applied without tension to the dancer's sole of foot, where it may or may not play a role concerning individually perceived sensitivity due to cavus foot positioning (O'Loughlin et al. 2008).

Methods

Participants

In expectation of a medium effect (Cohen's $f \geq .25$) $N = 15$ dancers ($n = 2$ male dancers, age = 19 ±1 years; $n = 13$ female dancers, age = 23 ±5 years) were recruited to participate in this study (Cohen 1988). The dancers reported to practice about five hours per week in modern and/or classical ballet dancing with an average training experience of twelve years. It was decided to choose this level of expertise to assure that participants with an intermediate expertise level may have an appropriate scope to be affected by the elastic tape applications (Chi 2006). Neither of the participants reported to have any lower extremity injury, nor experience with the tape applications used in this study. Dancers were asked to perform two postural control tasks: one-legged demi-pointe standings and one-legged sissone ouverte landings in four conditions: 1. no tape application (baseline), 2. ankle joint tape application (AJTA), 3. leg muscle tape application (LMTA), and 4. control tape application (COTA). The dancers were informed about the general procedure of the study and gave their written consent prior to the study. They were, however, not informed about the hypothesised function of each tape application condition in each postural control task.

Measures

Experimental Tasks. In the first part of the study dancers were instructed to perform one-legged demi-pointe standings with the non-supporting leg in a sur le coup-de-pied position. In the second part of the study the dancers were instructed to perform sissone ouverte landings (cf. Figure 1). Both experimental tasks should be stabilized for three consecutive seconds in a turnout position each and were performed on a force platform with a sampling rate of 1000 Hz (TrueImpulse™, Northern Digital Inc., Canada). It was decided to use the two aforementioned experimental tasks, since they are fundamental in modern and/or classical ballet dance performances (Messerer and Briansky 2007). For instance, one-legged standing positions and/or pirouettes on the balls of the feet, stabilized for several seconds, occur in modern and/or classical ballet dance routines with or without the barre and represent the one-legged demi-pointe and thus the dancer's ability of standing postural control. Absorbing momentum from a prior movement and immediately stabilize for several seconds on one leg occurs when steps, jumps, leaps and/or pirouettes are slowed down, paused or ended and represent the sissone ouverte and thus the dancer's ability of landing postural control. Both experimental tasks require the dancer to remain in equilibrium, whereas the demi-pointe intends to be stabilized initially without any prior activity and the sissone ouverte intends to be stabilized reactively following a prior activity. In this manuscript the term standing postural control is referred to the experimental task demi-pointe, whereas the term landing postural control refers to the experimental task sissone ouverte (Riemann et al. 2002a; Messerer and Briansky 2007).

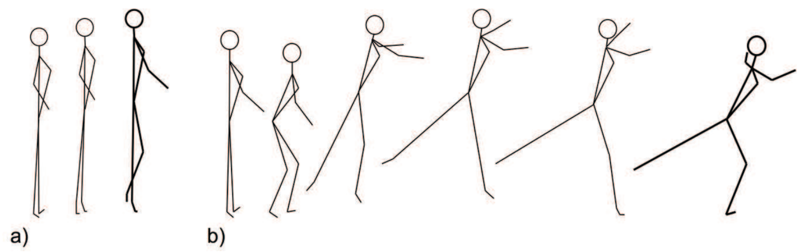

Figure 1. Experimental postural control tasks. Stick-figure sequence of the two experimental postural control tasks implemented in this study. Figure a) represents the demi-pointe standing postural control task: Starting from fifth position the dancer rose into the demi-pointe, releases his/her non-supporting leg into a sur le coup-de-pied to stabilize this position (thick outline) for three consecutive seconds. Figure b) represents the sissone ouverte landing postural control task: Starting from fifth position, the dancer jumped off from both legs to land in a one-legged demi-plié position with the non-supporting leg hold backwards in a layout position to stabilize this position (thick outline) for three consecutive seconds.

During both experimental tasks, dancers were instructed to hold their arms in an appropriate manner and in line with their typical positioning during modern and/or classical ballet dance routines. All participating dancers were allowed to perform both tasks with their preferred leg, whereas each dancer decided to use his/her right leg as supporting leg. When performing the demi-pointe standing postural control task, each dancer stood in fifth position on the force platform with the arms in preparatory position, rose into the both-legged demi-pointe with arms in first position and released his/her non-supporting leg to the dorsal part of his/her calcaneal leg (sur le coup-de-pied) to stabilize this turnout position for three consecutive seconds (cf. Figure 1a). When performing the sissone ouverte landing postural control task, the dancer stood in fifth position in front of the force platform, jumped off from both legs to land in a one-legged demi-plié position with the supporting leg on the force platform to stabilize this turnout position for three consecutive seconds. During the sissone ouverte the dancer moved his/her right arm from the preparatory position into the first position, whereas the left arm was moved from preparatory position into the second position. The non-supporting left leg was hold backwards in a layout position with a hip angle of approximately 200° (cf. Figure 1b).

Prior to each postural control task, the dancer was instructed to stabilize each position as accurate as possible. Additionally, in all tape application conditions, the dancer was instructed in such a way that all tape applications support postural control performance.

Movement Analysis. Ground reaction force measurements of all postural control performances were analysed using a force platform operating with a sampling rate of 1000 Hz (TrueImpulse^{TM}, Northern Digital Inc., Canada). Following the argumentation of previous studies (Riemann et al. 2002a; Winter 2009) and with the help of a trained biomechanist variable errors of force magnitude in 1) forward-backward direction and 2) side to side direction were calculated in order to represent dancer's regulation of standing and landing postural control performance. The kinematic parameter 3) peak impact force during landing phase was calculated based on dancer's body weight for the landing postural control task performances to represent vertical ground reaction force. Additionally in the landing postural control task the overall duration of three consecutive seconds was subdivided into three episodes of overall duration to represent dancer's ability to regulate postural control over time in 4) episodes.

Each participant was asked to perform four valid trials of each postural control task in each tape application condition and in the baseline condition. In order to get an estimation of dancer's standing and landing postural control performances, means and standard errors of force magnitude's variable errors of dancer's ground reaction forces were calculated. Thereby, horizontal ground reaction forces were calculated for both, static standing and landing postural control tasks, whereas vertical ground reaction forces were additionally calculated for the landing postural control task.

Tape Application Procedures. The elastic tape applied in this study was a black, 5 cm wide, elastic tape (K-Tape®, biviax GmbH, Germany). It was decided to use black tape throughout the whole study to avoid colour preferences.

Figure 2. Elastic tape applications. Elastic tape applications used in this study. a) shows the ankle joint tape application covering dancer's ankle joint by using two I-shaped tape straps. b) shows the leg muscle tape application at dancers lower limb by using one Y-shaped tape strap covering the triceps surae and one I-shaped tape strap covering the tibialis anterior. c) shows the control tape application at dancer's sole of foot by using an I-shaped tape strap.

In one tape application condition (AJTA) the ankle joint is taped using two I-shaped elastic tape straps. The first I-shaped elastic tape strap encloses the ankle joint from caudal to cranial, whereas the second I-strap encloses the ankle joint from dorsal to ventral (Bökelberger and Lehner 2012, cf. Figure 2a). It was decided to apply the elastic tape in such a way and with 50–75% of stretch, because this application and amount of stretch is thought to stabilize and support the taped joint (Kase et al 2003; Kumbrink 2012). In another tape application condition (LMTA), the right triceps surae muscle was taped from origin to insertion (proximal to distal) using a Y-shaped elastic tape strap (Vercelli et al. 2012), whereas the right tibialis anterior muscle was taped from origin to insertion (proximal to distal) using an I-shaped elastic tape strap (Kumbrink 2012, cf. Figure 2b). It was decided to apply the elastic tape from origin to insertion and with 50–75% of stretch, because this direction and amount of stretch is thought to facilitate and activate the taped muscle (Kase et al. 2003; Kumbrink 2012). In an additional tape application condition (COTA) an I-shaped elastic tape strap was applied without additional stretch to the dancer's sole of foot, covering the narrowest area between the first and fifth metatarsal bone (cf. Figure 2c). This tape application condition should function as a control condition. A highly trained taping expert was asked to apply all elastic tapings.

Procedure

The study was conducted on two separate days. Depending on the experimental protocol, on the one day the dancer's experimental task was the standing postural control task (demi-pointe) and on the other day the dancer's experimental task was the landing postural control task (sissone ouverte). The order of the experimental tasks was randomly distributed to all participating dancers. Each of the two days consisted of the following four phases.

During the first phase the dancer arrived at the laboratory, was instructed about the general purpose of the study, and completed an informed consent form. Dancer's height and weight was measured and the dancer was given an individual ten-minute warm-up phase. Afterwards, a practice period up to ten minutes of the specific postural control task (demi-pointe standing or sissone ouverte landing depending on experimental protocol) was conducted to familiarize the dancer with the current experimental task. The second phase comprised a baseline condition in which the dancer performed four valid postural control task performances of the current experimental task (demi-pointe standings or sissone ouverte landings depending on the experimental protocol). The third phase consisted of a total of twelve postural control task performances. Each dancer was asked to perform blocks of four valid demi-pointe standings or sissone ouverte landings in the three tape application conditions. Ankle joint tape application condition (AJTA) and leg muscle tape application condition (LMTA) were randomly presented to each dancer in such a way, that one of two tape applications was presented first and the other one second. The control tape application condition (COTA) was always presented last. During each tape application condition, the right leg, the right ankle or the right sole of foot was taped and after a ten-minute time slot to ensure full adhesive strength of the tape application the dancer performed the actual postural control task performances (Vercelli et al. 2012). In the fourth phase a manipulation check was conducted indicating that none of the dancers detected a manipulation during task execution and/or study progress. Afterwards the dancer was debriefed and received a thank-you gift.

There was no time pressure during the study and each dancer was allowed to rest as needed. After a wash-out period of two weeks each dancer was undertaken the same four-phase procedure containing the second experimental task (sissone ouverte landing or demi-pointe standing depending on experimental protocol).

Data Analysis

A significant level of $\alpha = 5\%$ was defined for all results reported in this study. Separate univariate analyses of variance were calculated, taking the kinematic parameters 1) variable error of force magnitude in forward-backward direction and 2) variable error of force magnitude in side to side direction as dependent variables. During the landing postural control task the kinematic parameter 3) peak impact force during landing phase and the parameter 4) episodes were undertaken to the same analysis. Tape application condition (Baseline vs. AJTA vs. LMTA vs. COTA) was treated as a within-subjects factor. Cohen's f was calculated for all results reported. Post-hoc tests (Fisher LSD Test) were calculated for all significant results reported. The factor Trial (1 to 4) was controlled. Several analyses of variance were calculated beforehand to evaluate possible sequence effects of the factor Trial. In the standing postural control task F-values ranged between $F(3, 56) = 0.834$ and $F(3, 56) = 0.889$, whereas p-values ranged from $p = 0.481$ to $p = 0.573$. In the landing postural control task F-values ranged between $F(3, 56) = 0.031$ and $F(3, 56) = 0.374$, whereas p-values ranged from $p = 0.772$ to $p = 0.993$.

Results

It was hypothesized that the elastic tape application on dancer's leg muscles, ankle joints and soles of the foot influences postural control performance. Additionally, it was hypothesised that this influence may or may not depend on the two postural control tasks, namely the demi-pointe and the sissone ouverte. The effect of a control tape application without additional tension on the dancer's sole of foot and its influence on postural control performance was explored.

Demi-Pointe Standing Postural Control Task Performance

Figure 3 illustrates means and standard errors of dancer's variable error of force magnitude in forward-backward and side to side direction when performing the demi-pointe standing postural control task. There was a significant main effect of tape application condition (Baseline vs. AJTA vs. LMTA vs. COTA) for variable error of force magnitude in the forward-backward direction, $F(3, 177) = 2.693$, $p = 0.048$, Cohen's $f = 0.214$. Post-hoc analysis revealed that dancer's variable error of force magnitude in forward-backward direction was significantly lower compared to the baseline condition, when elastic tape was applied on dancer's ankle joints as well as on dancer's sole of foot. Concerning the variable error of force magnitude in side to side direction there was no significant effect $F(3, 177) = 1.493$, $p = 0.218$, Cohen's $f = 0.159$.

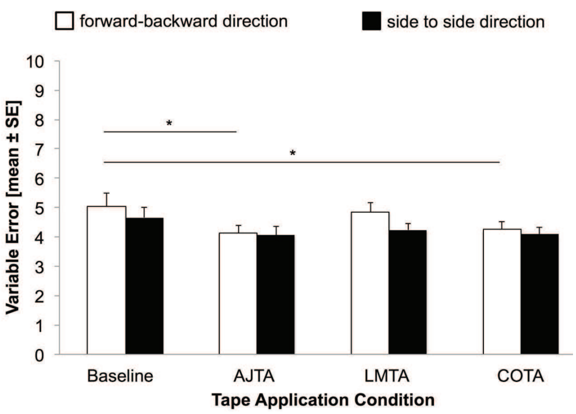

Figure 3. Demi-pointe standing postural control task. Means and standard errors of dancer's variable error of force magnitude in the two directions and the four tape application conditions when performing the demi-pointe standing postural control task (* = significant difference at $p < 0.05$ according to Fisher LSD post-hoc analysis).

Sissone Ouverte Landing Postural Control Task Performance

Figure 4 illustrates means and standard errors of dancer's variable error of force magnitude in forward-backward and side to side direction when performing the sissone ouverte landing postural control task. None of the calculated effects became significant, thus indicating no differences in variable error of force magnitude between the tape application conditions for the landing postural control task.

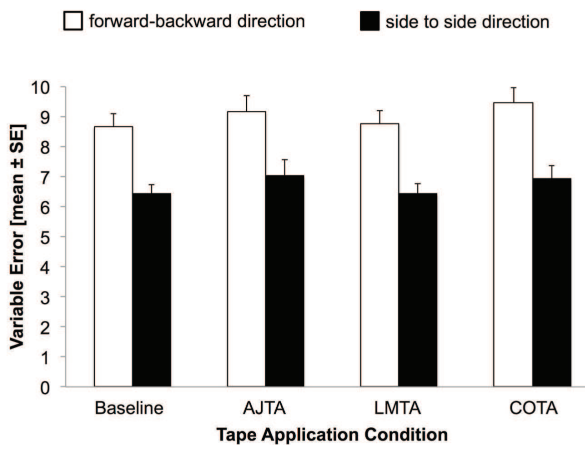

Figure 4. Sissone ouverte landing postural control task. Means and standard errors of dancer's variable error of force magnitude in the two directions and the four tape application conditions when performing the sissone ouverte landing postural control task.

Figure 5 represents means and standard errors of dancer's relative peak impact force during landing phase based on dancer's body weight. There was a significant main effect of tape application condition (Baseline vs. AJTA vs. LMTA vs. COTA) for peak impact force during landing phase, $F(3, 177) = 14.384$, $p < 0.010$, Cohen's $f = 0.494$. Post-hoc test revealed the following differences: First, compared to the baseline condition, dancer's peak impact force during landing was significantly larger when elastic tape was applied on dancer's ankle joints, whereas peak impact force significantly decreased when elastic tape was applied on dancer's leg muscles and sole of foot. Second, in comparison to the ankle joint tape application condition, dancer's peak impact force during landing was significantly lower in the leg muscle tape application condition, as well as in the control tape application condition.

Concerning time-discrete parameters, dancers in the landing postural control task were able to decrease their overall variable error of force magnitude over the time period of three consecutive seconds in a negatively exponential way. During the second third of the landing postural control task, participant's decreased their overall variable error of force magnitude about approximately 50% compared to the first third of the landing postural control task (defined as 100%). In the last third of the landing postural control task the overall variable error of force magnitude decreased about approximately 15% compared to the second third. The decrease was not affected by the tape application conditions.

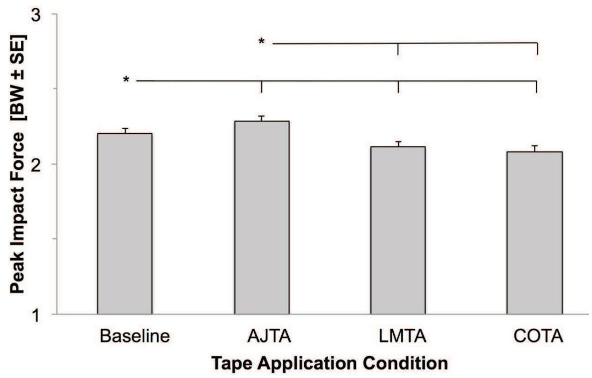

Figure 5. Sissone ouverte landing postural control task. Means and standard errors of dancer's peak impact force during landing phase and the four tape application conditions when performing the sissone ouverte landing postural control task (* = significant difference at $p < 0.05$ according to Fisher LSD post-hoc analysis).

Discussion

The aim of this study was to explore whether three different applications of elastic tape on the lower limb of active and healthy dancers influence their postural control performance in two different dance specific postural control tasks. It was hypothesized that elastic tape application on dancer's lower limb influences postural control performance positively. Additionally, it was hypothesized that this effect may or may not depend on the postural control tasks, namely the demi-pointe and the sissone ouverte. The influence of a control tape application without additional tension applied on the dancer's sole of foot was explored. In all tape application conditions, the dancer was instructed in such a way that all tape applications support postural control performance.

Most surprising are the following two results of this study. First, results revealed a decrease in variable error of force magnitude in forward-backward direction in the demi-pointe standing postural control task, whereas no such effect became apparent in the sissone ouverte landing postural control task. Variable error of force magnitude in side to side direction was neither affected in the standing postural control task nor in the landing postural control task. During the demi-pointe standing postural control task dancer's feet were positioned in a turnout with the foot rotated approximately 45° laterally. So, a regulation of postural control via ankle inversion and eversion resulted in a horizontal force magnitude regulation in forward-backward direction. Additionally, a larger area of support in forward-backward direction may enable the dancer to improve postural control performance, whereas the regulation in side to side direction may be already at its potential due to the small area of support.

Second, results indicate that different tape application procedures affect vertical ground reaction force measurements and thus load parameters of the ankle joint differently. The ankle joint tape application increases the peak impact force during the landing phase, thus hampering load parameters of the ankle joint, whereas the leg muscle tape application and the control tape application decrease the peak impact force during the landing phase, thus supporting load parameters of the ankle joint. This result is in line with former studies applying non-elastic tape straps to the ankle joint (Riemann et al. 2002b; Yi et al. 2003) indicating that elastic and non-elastic tape both may affect ankle joint kinetics and kinematics. Following the philosophy of elastic taping and the argued implications of the elastic tape applications used in this study, the ankle joint tape application condition is thought to stabilize the ankle joint, the leg muscle tape application is thought to support muscle functioning (Kase 2003; Kumbrink 2012; Vercelli et al. 2012). The control tape application without tension on a dance specific, sensitive area may or may not influence postural control performance. The results of this study reveal that first, the ankle joint tape application on the one hand supports dancer's ability to regulate postural control in the demi-pointe standing postural control task in forward-backward direction, but on the other hand hampers load parameters in the sissone ouverte landing postural control task. Second, the leg muscle tape application fails to effect the regulation of postural control in neither of the two experimental tasks, nor the two directions, but supports load parameters in the sissone ouverte landing postural control task. Third, the control tape application supports dancer's ability to regulate postural control in the demi-pointe standing postural control task in forward-backward direction and supports load parameters in the sissone ouverte landing postural control task.

The elastic tape application used in this study may have a facilitating effect on factors such as inter- and intramuscular coordination or even muscular co-contraction, as well as sensory input. However, these effects are yet speculative and open to further investigations.

There are several limitations of this study, and three specific aspects should be highlighted. First, it was decided to assess postural control performance by means of a force platform since former studies indicated a positive effect of elastic taping on postural control (Fayson et al. 2013; Nakajima and Baldridge 2013). However, the same postural control performance may result from different activation patterns of the leg muscles (Riemann et al. 2002b) thus masking the isolated effect of elastic taping on one particular area. Future studies should integrate more complex measurements in their designs like, for instance, electromyographic measurements or alike. Second, in this study it was decided to implement the ankle joint tape application and the leg muscle tape application separately instead of a combined ankle joint and lower leg muscle tape application as it was done in recent studies (Kase 2003; Halseth et al. 2004; Kumbrink 2012; Fayson et al. 2013; Hettle et al. 2013). As results indicate, the tape applications on different soft tissues and different lower limb areas affect postural control performance diversely. However, various straps of elastic tape occurring in one tape application procedure may mask and/or compensate each other's performance related effects. Therefore, future studies should further investigate the separate effects of each strap of the elastic tape application to determine if all straps are necessary to improve given effects (Fayson et al. 2013) and to control for possible masking effects when various straps of elastic tape are applied in one tape application procedure. Third, one could argue that the application of elastic tape may have different performance related effects in tasks where performance is related to object manipulation and/or control of sports equipment, thus requiring both coordinative, as well as conditional aspects of motor control. Exploring the effects of elastic taping on tasks with different demands and in light of the requirements of the sporting event in which athletes apply elastic taping should be taken into account for future studies.

Conclusions

When applying elastic tape for performance enhancing purposes it should be taken into account that empirical evidence is still inconclusive. Whereas former studies failed to report conclusive performance-enhancing effects, the results of the present study revealed a task-dependent performance-enhancing effect and an application-specific performance-influencing effect concerning vertical ground reaction force measurements.

It is concluded that the application of elastic tape for healthy, active dancers may on the one hand enhance parameters of postural control, whereas the same elastic tape application may hamper other performance related aspects of typical modern and/or classical ballet dance routines. Conflicting scientific results may thus indicate that generalized effects are controversial and positive influences in one specific characteristic can induce a decrease in another performance influencing characteristic. Although, athletes may use elastic tape for individual reasons such as comfort or even the belief in its clinical significance, it seems to be still of high interest to study potential effects in a standardized methodological approach and in light of the requirements of the sporting event.

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