

## THE IMPACT OF KINESIOTAPING COLOR ON PHYSICAL PERFORMANCE IN ADOLESCENT SOCCER PLAYERS IN ANKLE INJURIES

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### Abstract

**Background:** There is conflicting proof concerning the performance and muscle function effect of kinesiology tape. However, some studies have explored the color impact on products specifically intended to improve the efficiency of soccer players in adolescents

**Objective:** The cause, of take a look at was to investigate the effect of kinesiotaping color on physical performance of adolescent soccer players.

**Methodology:** Twenty-six healthy adolescents soccer players (Age  $13.53 \pm 0.28$  years; Stature  $1.58 \pm 0.16$  m; BMI  $21.7 \pm 3.06$  kg/m<sup>2</sup>;  $4.41 \pm 0.35$  soccer experience) participants in this study. Participants had been assessed underneath seven situations, applied in random order: (1) no kinesiology tape (control), (2) black-colored kinesiology tape carried out with tension (A), (3) black-colored kinesiology tape implemented with no tension (B), (four) blue-colored kinesiology tape implemented with anxiety (A), (five) blue-colored kinesiology tape carried out without a anxiety (B), and (6) red-colored kinesiology tape carried out with anxiety (A), purple-colored kinesiology tape implemented without a tension (B). Players executed a battery of soccer-unique bodily assessments, which includes (1) Standing lengthy leap check (explosive leg power), (2) Running speed test (speed), (3) Prone hold test (core stability/abdominal muscle endurance). One-manner repeated measures analyses of variance (ANOVAs) was applied and considering a 5% significance level.

**Results:** The kinesiology tape color had no positive effect on physical performance or strength of muscle. There was no significant when compared changes between groups. Measures of explosive leg power (Standing long jump) [(p > 0.245)]. Similarly velocity over 20 m [(p > 0.203)] and core stability [(p > 0.321)].

**Conclusion:** Kinesiotaping had no useful impact on muscle energy or decrease limb overall performance in healthful adolescent's soccer players. The color of the kinesiotaping did not influence athletic performance. Future study should aim to verify these results in a wide spectrum of sports.

**Key Words:** Soccer players. Physical performance. Kinesiotaping. Adolescents

### Background

Soccer is a sport of elevated involvement globally and like maximum sports, is linked with a positive threat of damage to gamers at each aggressive and recreational levels [1]. These operations will certainly involve the neuromuscular systems to function well [2]. Therefore such an significant goal that all of players create

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their maximum functional ability to improve their linear sprinting, leaping and agility [3]. Athletes seeking a physiological or psychological benefit are increasingly using one such item, kinesiology tape [4]. Kinesiology tape has been suggested to improve efficiency by promoting muscles, joints and fascia without restricting movement range [5]. Kinesiotaping is a somewhat new shape of taping approach in which Kinesio Tape (KT) is used. It turned into initially created in 1980 by using Kenzo Kase, a Japanese chiropractor, and has become famous in the scientific placing. The tape is roughly the identical duration because the epidermis, manufactured from polymer elastic strand wrapped with a hundred percentage cotton fibers, allowing for rapid body moisture and drying evaporation [6]. The tape does now not use latex and the adhesive traits are one hundred% warmness-activated acrylic. In order to sense like a part of the frame, the tape is light-weight and skinny. It can stretch one hundred forty% of its resting length and might continue to be on the frame for approximately 3-five days, including inside the shower, without compromising the first-class of the adhesive [7].

Moderate proof has been discovered in recent systematic reviews. That kinesiology tape does now not decorate recuperation or musculoskeletal ache [8]. These outcomes endorse that the almost ubiquitous use of kinesiology tape in expert game may be due to a perceived overall performance advantage as opposed to healing [9]. However, there's conflicting research at the effect of kinesiology tape on overall performance [4]. While numerous trials report that athletic performance, reduced limb power, and neuromuscular feature are strongly motivated by way of kinesiology tape [10, 11], others file that kinesiology tape has no effect on those consequences [12, 13]. Despite this uncertainty, customer pleasure with kinesiology tape maintains excessive, implying that its use can be associated with a psychological factor [14]. The effect of the tape color applied is a psychological variable that can account for disparities within the consequences of earlier studies. Several studies offer proof of a shade-wearing achievement courting. [15] Showed that contestants in crimson uniforms had a drastically higher possibility of prevailing Olympic boxing, taekwondo, freestyle wrestling and Greco-Roman wrestling than the ones in blue uniforms. In fact, the color red was suggested to improve strength production and neuromuscular function through a threat-based reaction in easy engine activities, which was believed useful during brief activity bursts. In contrast, color blue exposure has been related to improved efficiency during creative assignments and is believed to foster relaxation [16]. There is likewise

proof to indicate that the 'purple benefit' can also actually be due to a decline in opposition overall performance, rather than a higher performance the various purple-sporting athletes themselves [17]. Therefore, the effect of color may be context-specific, inspired with the aid of publicity cause and duration [17]. However, the effect of color on products intended to improve athletic efficiency has been explored by few research. Furthermore, the potential impact of color on other performance and neuromuscular function, has not been explored. Kinesiology tape is a useful way of exploring the role of color in these situations. Therefore, the intention of this observe became to research the impact of kinesiology tape coloration on performance and quadriceps neuromuscular characteristic of adolescent soccer players.

### Materials and Methods

#### Subjects

With ethical approval, twenty-six healthy adolescents soccer players (Age  $13.43 \pm 0.26$  years; Stature  $1.59 \pm 0.18$  m; BMI  $21.9 \pm 3.01$  kg/m<sup>2</sup>;  $4.28 \pm 0.27$  soccer experience) from a local soccer club participants in this study. The informed consent of the participant and the parent was acquired before involvement. Participants have been assessed beneath seven conditions, carried out In random order: (1) no kinesiology tape (manipulate), (2) black-colored kinesiology tape carried out with tension (A), (three) black-colored kinesiology tape implemented without a anxiety (B), (4) blue-colored kinesiology tape carried out with anxiety (A), (five) blue-colored kinesiology tape implemented without a tension (B), and (6) pink-colored kinesiology tape carried out with anxiety (A), purple-colored kinesiology tape implemented without a anxiety (B).

#### Physical performance tests

Players performed a battery of football-particular physical exams, consisting of (1) Standing long leap check (explosive leg strength), (2) Running speed test (speed), (3) Prone preserve test (center balance/stomach muscle persistence). With the exception of the prone hold (single trial), the highest score from three attempts was reported as the results of the subject and the average of the best two trials was determined and used for assessment.

#### Standing long jumping test

The ability to generate explosive leg power can assist to create most sprinting

and leaping attempt while playing football [18]. In this take a look at, the standing long bounce test grow to be used to evaluate the explosive leg electricity, (Figure 1) and observed the technique cited by way of the usage of [19] to evaluate the capacity of a participant to replace leg energy in a horizontal path.

**Prone hold (core stability) test**

Good middle balance is one of the most significant parts of sport involvement at the highest level. Higher core stability output needs effective operations of the nervous system, which can lead to better postural control particularly during quick dynamic movement, according to [19]. Participants had to keep as long as possible a susceptible hold (plank) stance, (Figure 2). During the trial, participants were supervised to guarantee that good shape was preserved. During the entire experiment a linear horizontal position was required. As the test score was registered the length for which the necessary position was held.

**Running speed test**

The most running velocity changed into measured over (20) m, [20] (Figure 3). It is vital to have the potential to run at a high pace when attempting to attain goal or save you a ball being scored. The take a look at began with one foot in the front of the opposite from a desk bound role and kept for at least 2 seconds before jogging. The researcher assistant gave the subject incentive to hold to run tough till the finish line. The average of studies becomes suggested as the score for this experiment in which the trial permitted an appropriate retrieval time (three to five min).

**Application of Kinesio Tape**

Following the baseline examination, participants have been assessed beneath seven experimental situations, carried out in random order: (1) no kinesiology



Figure 1: Standing long jump test.



Figure 2: Prone hold (core stability) test.



Figure 3: Running speed test.

tape (control), (2) black-colored kinesiology tape applied with anxiety (A), (three) black-colored kinesiology tape carried out and not using a tension (B), (4) blue-colored kinesiology tape carried out with tension (A), (5) blue-colored kinesiology tape implemented with no anxiety (B), and (6) crimson-colored kinesiology tape implemented with anxiety (A), crimson-colored kinesiology tape carried out without a anxiety (B). All members in KT tape organization have been taped for (Ankle balance taping) with 50% anxiety. The ankle balance taping includes four ranges [21]. The first level (A), is posterior taller gliding taping, that's done to growth the dorsiflexion of the ankle. This taping devices the ankle in a slightly dorsiflexed function and starts off evolved from the front part of the talus, passes via both aspects of the malleolus, and wraps up the calcaneus. The 2nd degree (B), is inversion taping for the inversion of the ankle. Putting the ankle in a slightly inversed state, taping starts from 5 cm above the internal malleolus, passes via the back side and down the outside malleolus, and wraps up the only from the outdoor to inner. The 0.33 stage (C), is eversion taping for eversion of the ankle. It units the ankle in a slightly everted characteristic and starts off evolved off developed from 5 cm above the outside malleolus, passes thru the lower back and down the internal malleolus, and wraps up the handiest from the interior to outdoor. The fourth diploma (D) applies posterior taller gliding taping performed inside the first stage twice. Putting the ankle in a barely dorsiflexed country, taping starts off evolved from the talus, passes through each elements of the malleolus, and wraps up the calcaneus to growth dorsiflexion (Figure 4).

**Statistical analysis**

Means ± SD for all measures have been calculated. For evaluating groups, a statistical software program bundle (SPSS v19) turned into used. The unbiased t-test come to be used at baseline to test the homogeneity of the corporations' characteristics. The differences between organizations have been as compared using one-manner repeated measures analyses of variance (ANOVAs) and importance was set at  $p \leq 0.05$ .

**Results**

Overall, 9 members favored the color black, ten members favored the coloration blue and 7 participants favored the color crimson. There have been no substantial interplay among coloration preference and tape condition became determined in measures explosive of leg energy between CON and EXP (KT with tension and KT with no anxiety) groups (Horizontal soar [-0.94% ( $p > 0.05$ ) and -0.47% ( $p > 0.05$ ) respectively]. Similarly, core balance become no large interaction between shade preference and tape situation changed into found among CON and EXP (KT with anxiety and KT without a tension) corporations [-1.99% ( $p > 0.05$ ) and -2.04% ( $p > 0.05$ ) respectively]. Speed over (20) m changed into no sizeable interplay among shade choice and tape situation was located among CON and EXP (KT with anxiety and KT and not using a tension) agencies [-0.28% ( $p > 0.05$ ) and -0.56% ( $p > 0.05$ ) respectively] (Table 1). There changed into no huge interaction among folks that preferred black, blue and those who favored pink ( $p > 0.05$ ). These findings show that the physical performance become no longer tormented by the coloration of tape, amount of hysteria at the tape, or personal choices of colors.

**Discussion**

The findings of the present study showed no positive physical performance improvements for all the variables examined within the experimental group



Figure 4: Application of Kinesio Tape.

**Table 1:** Control group (no-KT), Experimental group (KT with tension) and (KT with no tension) data, and percent changes for all measures in both groups. Values are mean ( $\pm$  SD).

Tests	CON group (no-KT) (n=26)	EXP group				P value
		(KT with tension) (n=26)	CON, EXP (KT with tension) $\Delta\%$	(KT with no tension) (n=26)	CON, EXP (KT with no tension) $\Delta\%$	
Horizontal jump (m)	2.11 $\pm$ .16	2.09 $\pm$ .12	-0.94	2.10 $\pm$ .17	-0.47	.257
Core stability (s)	51.23 $\pm$ 24	50.21 $\pm$ 35	-1.99	50.18 $\pm$ 26	-2.04	.302
20m sprint (s)	3.52 $\pm$ .25	3.51 $\pm$ .19	-0.28	3.54 $\pm$ .17	-0.56	.315

$\Delta\%$ , Percentage of change; CON, Control group; EXP, Experimental group; KT, kinesiology.

as compared to the manipulate group. In soccer performance, it is crucial for scoring targets with a purpose to leap better to go the ball in attacking or shielding conditions [19]. In addition, leg power (a made from power and velocity) is likely to be associated with enhanced potential to leap and dash on the pitch. However, the risk of ankle, knee and different lower limb incidents will also be reduced [22, 25]. In the prevailing examine, consequences showed there were no great interaction between shade preference and tape circumstance become found in measures explosive of leg electricity between CON and EXP (KT with anxiety and KT with no anxiety) businesses in (Horizontal jump [-0.94% ( $p > 0.05$ ) and -0.47% ( $p > 0.05$ ) respectively]. Whilst also there were no changes in body weight or height over the period of this study. Similarly, middle stability turned into no significant interplay between color desire and tape condition was discovered among CON and EXP (KT with tension and KT without a tension) groups [-1.99% ( $p > 0.05$ ) and -2.04% ( $p > 0.05$ ) respectively]. Speed over (20) m became no giant interaction among color preference and tape condition was observed between CON and EXP (KT with tension and KT with no tension) groups [-0.28% ( $p > 0.05$ ) and -0.56% ( $p > 0.05$ ) respectively]. There become no full-size interplay between folks that desired black, blue and people who favored purple ( $p > zero.05$ ). These findings display that the bodily overall performance turned into not tormented by the coloration of tape, quantity of anxiety on the tape, or personal possibilities of colors.

In addition, this observes offers evidence of no impact on bodily performance by the cooler of kinesiology tape. Moreover, our research supports earlier released statistics in this populace organization that indicates that taping of kinesiology isn't efficient as compared to no tape or tape finished without or with tension [23]. No mental or neurophysiological mechanisms to decorate the performance of kinesiology tape to enhance bodily overall performance in adolescent's soccer gamers. Indeed, individual and group sports have a look at suggests that jersey color can have an effect on success costs in uniformly matched competitions, with pink being more intently related to winning than different colorations [24]. It is likewise idea that the coloration crimson increases the motor output force and the rate at which energy is generated [24]. Our outcomes that kinesiology tape shade did no longer have an effect on muscle electricity war with earlier research imply that red color enhances power generation and motor output [15]. Previous research presented individuals with the shade red in a static manner and advised them to without delay view the color [15, 4]. Participants have been no longer particularly cautioned to view their tape implementation in this have a look at and therefore can also had been less stricken by versions in cooler. In addition, the amount of tape carried out may not have been enough to provide a shade impact.

### Conclusion

In, conclusions the effects of this study display that, the kinesiotaping had no useful effect on muscle electricity or lower limb performance in healthy adolescent's soccer players. In addition, the consequences of this look at make contributions to the frame of records on kinesiology tape efficacy and overall performance effect of color. The color of the kinesiology tape did not have an effect on athletic overall performance. Future study should aim to verify these results in a wide spectrum of sports.

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