



## KINESIO TAPING INFLUENCE THE AGILITY OF RECREATIONAL SOCCER PLAYERS

Robby Robby<sup>1,2</sup>, Aditya Paramitha Andini<sup>1,2</sup>, Tanti Ajoe Kesoema<sup>1,3\*</sup>

<sup>1</sup>Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Universitas Diponegoro, Semarang, Indonesia

<sup>2</sup>Dr. Kariadi General Hospital, Semarang, Indonesia

<sup>3</sup>Diponegoro National Hospital, Semarang, Indonesia

### Keywords:

agility,  
agility T test,  
kinesio taping,  
recreational soccer

Received: 9 September 2024

Revised: 4 May 2025

Accepted: 5 May 2025

Available online: 1 July 2025

### Corresponding Author:

E-mail: [tantiajoe68@gmail.com](mailto:tantiajoe68@gmail.com)

### ABSTRACT

**Background:** Soccer is a physical activity that requires good agility to run fast, dribble the ball, avoid opponents and guard opponents. Kinesio taping is used in rehabilitation, especially for the treatment and prevention of musculoskeletal system injuries, but there is not enough data in increasing the agility of soccer player. **Methods:** This study was a quasi-experimental with a pre-post test group design on 60 males aged 17-25 years who played recreational soccer. Subjects were divided into 2 groups consisting of intervention group (n = 30) and control group (n = 30). The intervention group received kinesio taping with a facilitation technique with a 35% pull on the quadriceps, gastrocnemius and soleus muscles, while the control group received sham, non-elastic adhesive tape on the same muscle group. Agility measurements were carried out before and after 30 minutes of intervention using the Agility T Test in both groups. **Results:** There was no statistically significant difference in the average agility score before intervention between the control group ( $11.38 \pm 0.83$  seconds) and the treatment group ( $11.47 \pm 1.20$  seconds) with  $p=0.7304$ . In control group, there was no statistically significant difference in the average agility score before ( $11.38 \pm 0.83$  seconds) and after ( $11.40 \pm 0.79$  seconds) the intervention ( $p=0.6184$ ). In intervention group, there was a statistically significant difference in the average agility score before ( $11.47 \pm 1.20$ ) and after ( $10.99 \pm 1.20$ ) intervention ( $p=0.000$ ). **Discussion:** The facilitation technique of kinesio taping increases muscle strength and muscle contraction leading to increased agility. **Conclusion:** Kinesio taping increase the agility of recreational soccer player.

Copyright ©2025 by Authors. Published by Faculty of Medicine, Universitas Diponegoro Semarang Indonesia. This is an open access article under the CC-BY-NC-SA (<https://creativecommons.org/licenses/by-nc-sa/4.0/>)

## INTRODUCTION

Sports are a rehabilitation component to maintain a person's health and physical fitness. Soccer is one of the popular recreational sports. When doing soccer, the ability to make sudden or explosive movements is often required.<sup>1-2</sup>

Agility is important for improving sports performance and preventing injury. Agility is a more important component than muscle strength, not only for physical function but also for dynamic balance, ability to return and prevent falling when there is a threat to balance such as an uneven surface, slippery surface, and a protective response when falling. Agility also plays a very important role in various

movements during soccer such as running sideways, zigzagging and sprinting.<sup>15</sup>

The ability to achieve higher agility requires good lower extremity muscle strength. There are several ways to improve agility, including specific exercises such as sprint training, agility training, strength training and kinesio taping.<sup>3,6,14</sup>

Kinesio taping has been widely used in the field of rehabilitation, especially for the treatment and prevention of musculoskeletal system injuries, but various studies on the effect of kinesio taping on agility are still unclear.<sup>17</sup> Kinesio taping allows stimulation of muscle contraction reflexes and inhibition of antagonistic muscle reflexes through



stimulation of cutaneous mechanoreceptors by kinesio taping which causes increased motor control and coordination of the joints to increase so that muscle contraction is optimal.<sup>4,5,7,8,18</sup>

In the study by Eom *et al.*, the application of kinesiotaping to the ankles of 15 university students increased agility after application. In the study by Hanayoglu *et al.*, the application of kinesio taping to men aged 18-38 years in the quadriceps and gastrocnemius increased agility after 48 hours of use.<sup>5,8</sup>

In addition, there has been no research that specifically looks at the effect of kinesio taping on agility in recreational soccer players. Therefore, this study liked to compare the effects of installing kinesio taping on agility as measured by the agility T-test in recreational soccer players.

## METHODS

### Subjects

This study was conducted on May 31-June 1, 2023 at Metro Sport Arena Semarang. The total number of research subjects who met the inclusion and exclusion criteria, and were willing to participate in the study by signing an informed consent was 60 people. The research sampling technique by consecutive sampling and then simple randomization into 2 groups, the intervention group (kinesio taping) and the control group (placebo taping), where the number of subjects in the control group was 30 people and in the intervention group was 30 people.

Inclusion criteria: Males aged 20-35 years, recreational soccer players, able to understand and follow the examination instructions given (Moca ina> 26), lower extremity muscle strength with a value of 5 on the MMT examination.

Exclusion criteria: Pain in the lower extremities with VAS> 1, history of musculoskeletal injury or surgery in the last 6 weeks, hypersensitivity to kinesio taping materials, there are wounds or non-specific skin diseases in the area of kinesio taping installation.

Subjects will be educated about the instructions for conducting the test and measurement so that the research runs as expected.

The research has received approval for ethical clearance from the Health and Medical Research Ethics Commission of Diponegoro University, Semarang, Indonesia.

### Intervention

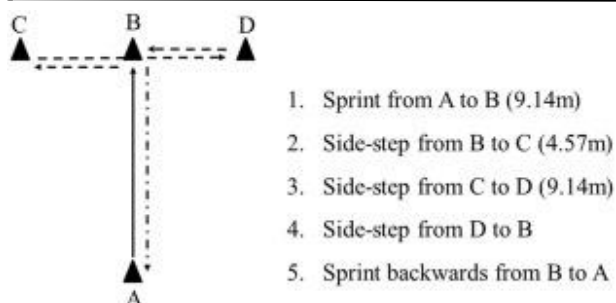
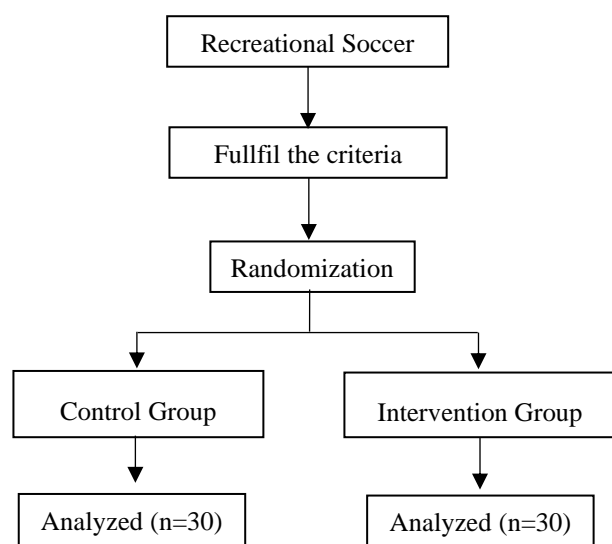
Subjects in the kinesio taping group were given kinesio taping with a facilitation technique according to a 35% stretch from the origin to the insertion on the quadricep muscle and tricep surae muscle. Before installing kinesio taping, the installation site was cleaned from sweat and oil using an alcohol swab, and if there was hair, it was shaved first.

Subjects in the placebo taping group were given placebo taping on the quadricep and tricep surae muscles using non-adhesive elastic tape (hypafix) without stretching.

After being given kinesio taping or placebo taping, the subjects waited 30 minutes for the Agility T-Test measurement, the research subjects were informed not to do heavy activities while waiting.

### Measurements

Subject agility was measured using the Agility T test where the subjects were asked to pass 4 points as quickly as possible. Measurements were taken before and after the intervention in both groups. The tools needed to measure the agility T test are 4 cones, a timer, and a floor with a flat surface. Participants were measured how long they could complete this test from point A to return to point A again. Measuring time using a timer. The order of completion of this running test was first standing on cone A then the timer was run simultaneously with the participant starting to run. Starting from cone A, participants sprint to cone B and touch cone B, then run sideways (side shuffle) to cone C and touch cone C, then side shuffle to cone D and touch cone D, then side shuffle to cone B and touch cone B, then run backwards back to cone A and touch cone A. During the test, participants had to face forward and when running sideways their feet should not cross each other. The test was disqualified if: The participant did not touch the cone, crosses one leg in front of the other when running sideways, did not face forward for the entire test. The test measurement was carried out 3 times and the best result was taken, with a 5-minute rest interval in between. Before doing the Agility T Test, participants do a 5-minute warm-up.


**Image 1. Agility T-Test**

**Image 2. Consort Diagram**

## Statistical Methods

Data analysis consists both descriptive analysis and hypothesis testing. Prior to testing the hypothesis, descriptive statistics were employed to describe the demographic features of the participants. The Shapiro-Wilk test was done to see the distributions within the groups were normal. The independent t-test was used to compare agility, age, body height, and flexibility in pre-intervention data between the control and intervention groups. The Mann-Whitney test was used to compare body weight and body mass index in pretest data between control and intervention groups. The Fisher's exact test was used to compare training frequency in pretest data between control and intervention groups. To determine the difference in agility values before and after the intervention, a Paired t-test was used in both group. All data was processed on a PC using Stata® version 13.1. A P

value  $<0.05$  with a 95% confidence interval indicates the study's significance criteria was met.

## RESULTS

Until the end of the study, the data analyzed from 60 people. No subjects dropped out of this study. There were no side effects reported during the intervention in either the control or intervention groups.

The characteristics of the study subjects were described in the table below. It can be seen that both groups were homogeneous and there was no significant difference at the beginning before the intervention between the control and treatment groups for age ( $p = 0.058$ ), weight ( $p = 0.86$ ), height ( $p = 0.902$ ), body mass index ( $p = 0.842$ ), flexibility ( $p = 0.456$ ), and exercise frequency ( $p = 0.241$ ).

The average initial agility results of the study were obtained in the control group ( $11.38 \pm .83$  seconds) lower than the treatment group ( $11.47 \pm 1.20$  seconds). However, from the independent t-test, there was no significant difference between the two groups ( $p = 0.7304$ ).

In the control group, the average agility results before treatment were  $11.38 \pm 0.83$  seconds and the agility results after intervention were  $11.40 \pm 0.79$  with a paired t-test showing an insignificant difference with  $p=0.6184$  with a mean increase change of  $0.02 \pm 0.23$  seconds. In the treatment group, the average agility before intervention were  $11.47 \pm 1.20$  and the average agility after intervention were  $10.99 \pm 1.20$  with a paired t-test showing a significant difference with  $p=0.000$  with a mean decrease of  $0.48 \pm 0.25$  seconds.



Robby Robby, Aditya Paramitha Andini, Tanti Ajoe Kesoema

**Table 1.** Characteristics of the subject

Variable	Group		P
	Control Group (n=30)	Treatment Group (n=30)	
Age (years)	19,8 ± 1,16	20,4 ± 1,25	0,058 <sup>§</sup>
Weight (kg)	67,93 ± 12,38	67,43 ± 9,27	0.865 <sup>¥</sup>
Height (cm)	170,82 ± 5,37	171 ± 6,06	0,902 <sup>§</sup>
Body mass index (kg/m2)	23,21 ± 3,52	23,03 ± 2,68	0.842 <sup>¥</sup>

Description: <sup>§</sup> Independent T; <sup>¥</sup> Mann whitney

**Table 2.** Comparison of Agility Between Control and Treatment Groups

Agility (second)	Control Group (n=30)	Intervention Group (n=30)	P
Pre test	11,38 ± 0,83	11,47 ± 1,20	0,7304 <sup>§</sup>
Post test	11,40 ± 0,79	10,99 ± 1,20	
P	0,6184 <sup>¶</sup>	0,0000 <sup>¶*</sup>	

Description: \* Significant (p < 0,05); <sup>§</sup> Independent T; <sup>¶</sup> Paired T

## DISCUSSION

The characteristics of the research subjects in the treatment group and the control group did not differ significantly. This shows that the characteristics of the research subjects in both groups were homogeneous, thus reducing bias from the results of this study. The number of subjects at the beginning of the study was 60 people and at the end the total number of subjects analyzed remained 60 people. There were no side effects reported during the intervention in either the control or intervention group.

The results of this study indicate that the effect of kinesio taping significantly increase agility. This is in line with the theory that the effect of kinesio taping with facilitation techniques can increase muscle strength by modifying muscle length, improving motor control, coordination, increasing recruitment of muscle motor units, stimulating agonist muscle contraction reflexes and antagonist muscle reflexes through stimulation of cutaneous mechanoreceptors.<sup>9,10</sup>

The facilitation technique will pull the skin, lift the fascia and connective tissue to provide space so that the muscles move more easily. Muscle tone will increase and the muscles will remain in a shortened position, this will optimize the overlap of actin myosin thereby increasing muscle contraction. Kinesio taping also increases blood circulation thus affecting muscle and myofascia function. Kinesio taping stimulates cutaneous mechanoreceptors and

this stimulation has an effect by increasing muscle excitability which will improve joint and muscle function and can also provide tactile input, where this tactile input interacts with motor control by changing the excitability of the central nervous system thereby increasing agility.<sup>11-13</sup>

The increase in agility in the effect of kinesio taping was similar to research including Eom *et al.* conducted a study on the use of kinesio taping on university students and obtained results of increased agility.<sup>5</sup> Gunadi *et al.* conducted a study on the effect of kinesio taping on the quadricep femoris muscle increasing the strength of the quadricep femoris muscle in adult non-athlete males, where strength is one element to increase agility.<sup>4</sup> Guven *et al.* reported an increase in sprint speed, balance and agility after given kinesio taping on adolescent badminton athletes.<sup>6</sup> Hanayoglu *et al.* reported that the effect of kinesio taping on the quadricep and gastrocnemius muscles increased agility.<sup>8</sup> Research conducted by Gilang *et al.*, the effect of kinesio taping on quadricep, hamstring and calf muscles of amateur basketball players found an increase in leg muscle strength.<sup>21</sup>

In this study, kinesio taping was given to the lower extremity muscles, the quadricep femoris and tricep surae muscles, which are especially important in producing great strength, especially for agility. The determination of the location of kinesio taping is based on the use of muscle types that play an important role in running biomechanics, especially during the push-off phase where the muscles that play





Robby Robby, Aditya Paramitha Andini, Tanti Ajoe Kesoema

a role are the extensors of the knee, the quadriceps femoris and tricep surae.<sup>11,12</sup>

In this study, kinesio taping was given with a facilitation technique, installation from the origin to the insertion with a stretch of 35%. Measurements were taken after 30 minutes of kinesio taping installation to ensure good and effective adhesion based on the case of effective kinesio taping application after 20-30 minutes. The treatment of measurement and installation of kinesio taping was carried out by the researcher himself so as to minimize bias in the application of kinesio taping in the treatment.

Kinesio taping is known for the prevention and management of injuries, in addition it can also improve performance in sports.<sup>16,22</sup> In this study, kinesio taping increase agility without any side effects so that the use of kinesio taping might improve performance in sports.

Something unexpected happened in the control group where there was a decrease in agility which might be due to the placebo taping in this study using non-elastic tape which has no therapeutic effect, because its inelastic tape will limit muscle movement so that the agility decrease although statistically not significant. This is similar to the study conducted by Rasyidin *et al.* where in their study using placebo taping using non-elastic tape the results also showed a decrease in hand grip strength but not significant.<sup>19</sup>

This study has several limitations. Agility measurements, the results can be affected by the type of footwear. Measurements were performed on a single occasion so that only assess the short-term effects of kinesio taping application.

## CONCLUSION

There was a significant increase in agility in recreational soccer players who were given kinesio taping on the quadriceps and triceps surae muscles. This result can be used to improve performance in sports, especially those requiring agility. For future research, agility measurements should eliminate the effects of footwear by matching footwear or not wearing footwear. Measurements should also be done several times, not just done in single occasion.

## ETHICAL APPROVAL

The Research Ethics Committee at the Health and Medical Research Ethics Commission of Diponegoro

University, Semarang, Indonesia granted ethical approval with the ethical clearance number No.311/EC/KEPK/FK-UNDIP/VI/2023.

## CONFLICTS OF INTEREST

The authors declare no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

## FUNDING

The authors did not receive any financial support for the research and publication of this article.

## ACKNOWLEDGMENTS

The author thank all the participant who participated in this study. This research was supported by Department of Physical Medicine and Rehabilitation, Faculty of Medicine, Diponegoro University.

## REFERENCES

1. Kilic O, Kemler E, Gouttebarga V. The “sequence of prevention” for musculoskeletal injuries among adult recreational footballers: A systematic review of the scientific literature. *Physical Therapy in Sport*. 2018;32:308-22.
2. Shah Hosseini M, Rajabi R, Minoonejad H, Hossein Barati A. Effect of Eight Weeks of FIFA 11+ Training on the Agility and Explosive Power of Male College Volleyball Players. 2019;17(3):e97233.
3. M. Sheppard, W. B. Young. Agility literature review: Classifications, training and testing. *Journal of Sports Sciences*. 2006; 24(9):919-32.
4. Gunadi J, Limyati Y, Ladi J, Clara S, Sinaga H. The Effect of Kinesio Taping on Quadriceps Femoris Muscle Power and Strength in Non-Athlete Adult Males. *Journal Of Medicine & Health*. 2017;1.
5. S. Y. Eom, W. J. Lee. The effect of ankle Kinesio taping on range of motion and agility during exercise in university students. *Korean Academy of Physical Therapy Rehabilitation Science*. 2014; 3:63-8.
6. F. Güven, S. Aktaş. Effects of Kinesio Taping on Sprint, Balance and Agility Performance in 10-12 Years Old Badminton Players. *Health and sports sciences-2021*;24:919-23.



7. Mostert K. Effect of kinesio taping on explosive muscle power of gluteus maximus of male athletes. *South African Journal of Sports Medicine*. 2016;24:75.
8. Hanayoglu T, Can Sema. The Effect of Kinesio Taping Applied to Quadriceps and Gastrocnemius Muscles on Speed, Agility and Flexibility: A Cross-Sectional Study. *Journal of Musculoskeletal and Neuronal Interactions*. Vol. 23 2023; 23.
9. Reneker JC, Latham L, McGlawn R, Reneker MR. Effectiveness of kinesiology tape on sports performance abilities in athletes: A systematic review. *Physical Therapy in Sport*. 2018;31:83-98.
10. Serra MVGB, Vieira ER, Brunt D, Goethel MF, Gonçalves M, Quemelo PRV. Kinesio Taping effects on knee extension force among soccer players. *Brazilian journal of physical therapy*. 2015;19(2):152-8.
11. Frontera PWR, Frontera WR. *Delisa's Physical Medicine and Rehabilitation: Principles and Practice, Two Volume Set*: Wolters Kluwer Health; 2015.
12. Lippert LS. *Clinical Kinesiology and Anatomy*. 5 ed. Philadelphia: F.A. David Company; 2011.
13. *Ilmu Kedokteran Fisik Dan Rehabilitasi*. Jakarta: PERDOSRI; 2016.
14. LaPorta JW, Brown LE, Coburn JW, Galpin AJ, Tufano JJ, Cazes VL. Effects of different footwear on Agility T Test and landing parameters. *Journal of strength and conditioning research*. 2013;27(3):733-7.
15. Musa D, Toriola AL. Estimation of power output from Agility T Test: A comparison of three prediction equations. *Journal of Human Movement Studies*. 2006;51:11-20.
16. Kase K. *Illustrated Kinesio Taping*. 4 ed: Ken'i-Kai; 2005.
17. *Asesmen & Prosedur Kedokteran Fisik dan Rehabilitasi*. Jakarta: PERDOSRI; 2012.
18. Bridges T, Bridges C. *Length, Strength and Kinesio Tape - eBook: Muscle Testing and Taping Interventions*: Elsevier Health Sciences; 2016.
19. Siregar MRA, Wardhani IL, Sulistiawaty NN, Andriana RAM. Immediate Effect of Kinesiotaping on Non-dominant Wrist Extensor Muscles: an Alteration in Handgrip Strength of Healthy Individuals. *Surabaya Physical Medicine and Rehabilitation Journal*. 2022;4(2):44-8.
20. Gilang I, Lesmana, Nasrulloh A. The effectiveness of kinesio tape toward the ability of legs muscle's power of amateur basketball players. *MEDIKORA*. 2020;19.
21. Kase K. *Clinical Theurapeutic Applications of The Kinesio Taping Method*. 3rd ed. Albuquerque: kinesio IP LLC; 2013.