

Study Protocol

Following IRB approval, recruitment flyers will be posted around UNLV, and the approved social media posts and emails will be disbursed.

Interested potential participants will email the student researcher to schedule a 30-minute online Zoom meeting including an explanation of the study in detail, eligibility screening (Inclusion/exclusion criteria questions, Ishihara Color Vision Test, Phalen's test), explanation of consent form, collection of verbal consent. Visit 1 will be scheduled at least 48 hours after to allow participants to reconsider participation.

Research procedures are as follows: Participation in this study requires 2 visits to the UNLV Shadow Lane Campus OT Skills Lab located at 1125 Shadow Ln, Las Vegas, NV 89102. Visits will require no more than 60 minutes of the participant's time and involve kinesiology tape applications, quick performance measures, and questionnaires. Participants may receive up to a \$30 incentive for participation and may end participation at any time. \$15 Steam gift card will be distributed after completion of each visit.

This study follows a randomized controlled crossover design with 2 study arms: red KT and skin tone KT. Each intervention will be applied once and separated by a washout period which will be at least 1 week.

Participants will be randomly assigned to either group X or group Y, indicating their sequence of receiving the two treatments (red or skin tone KT). Group X would receive red KT then skin tone KT while group Y would receive skin tone KT then red KT. This will be done by having the participant select an envelope containing one of the two group assignments.

Repeated Outcome Measurements:

- SF- McGill Pain Questionnaire – 2 (SF-MPQ-2) will give outcomes of pain intensity and quality. It includes adjectives to describe both nociceptive pain and neuropathic pain. Pain descriptors can be categorized into Continuous (throbbing pain, cramping pain, gnawing pain, aching pain, heavy pain, tender), Intermittent (shooting pain, stabbing pain, sharp pain, splitting pain, electric-shock pain, piercing), Neuropathic (hot-burning pain, cold-freezing pain, pain caused by light touch, itching, tingling or "pins and needles", numbness), and Affective (tiring-exhausting, sickening, fearful, punishing-cruel)
- 3D Aim Trainer Attack Bombsite Simulation (ABS) at easy level difficulty is completed on a Dell PC with a keyboard and mouse setup. It will measure performance in first-person shooter esports games through a collection of overall scores and accuracy percentages. The participants will have to shoot at enemy targets while dodging attacks and surviving to the next stage. Each stage of the simulation will increase in difficulty. The simulation will be completed with the computer set to a grayscale display to

eliminate any effect of the colors of the original simulation. Each attempt of the simulation will end after 200 seconds. It will be completed in a private room with only the student researcher present. The simulation is free and can be found here: <https://www.3daimtrainer.com/> Data from this simulation will be stored under the participant's code on a protected Google Sheets document to de-identify participant results.

End of Study Survey (ESS) - completed only once online after self-removal of 2nd KT application. This survey will ask about how long the tape lasted before it lost adhesiveness, KT color preference, willingness to recommend KT to others, KT color effect on performance, and KT color effect on CTS symptoms. This will be completed anonymously at home as an additional component of the study to collect qualitative comments related to their experience with the KT. They will also be able to indicate their desire to learn how to self-apply KT. If they indicate an interest in self-application, they will be directed to email the student researcher.

Visit 1:

During the first visit, participants will select an envelope containing their random assignment to either group X or Y and complete the online demographics questionnaire. Then they will have 10 minutes to practice on the 3D Aim Trainer Attack Bombsite Simulation to understand the simulation goals and interface. During these 10 minutes of practice, they can edit the control settings to suit their preferences or utilize the default settings. They will then complete the pre-test of the 3D Aim Trainer Attack Bombsite Simulation. As they complete this simulation, their accuracy and overall score will be recorded. Each stage of the simulation will increase in difficulty and should take no longer than 5 minutes to complete. Then they will take the pre-test of the McGill Pain Questionnaire – Short Form 2 online through Qualtrics to assess pain quality and intensity. After these two pre-test outcomes are measured, they will receive the first kinesiology tape application. The color will be determined by the group assignment from the envelope. After the tape application, they will have another 3D Aim Trainer Attack Bombsite Simulation trial and practice session for 10 minutes to get used to the feeling of the tape before completing the post-test for the 3D Aim Trainer Attack Bombsite Simulation and the post-test for the Post-test: McGill Pain Questionnaire – Short Form 2. Upon completion of visit 1, participants will receive a Steam gift card of \$15. - They will be advised to leave the tape on for no more than five days, as recommended by the kinesiology tape brand Sparthos. The second visit will be scheduled at the end of this visit. It must be 12 days from the date of visit 1 to allow for at least a 7-day wash-over period in the case that the tape was kept on for a maximum of 5 days.

Visit 2:

The second visit will follow the same breakdown as the previous visit. They will have 10 minutes to practice on the 3D Aim Trainer Attack Bombsite Simulation to gain an understanding of the simulation goals and interface. During these 10 minutes of practice, they can edit the control settings to suit their preferences or utilize the default settings. They will then complete the pre-test of the 3D Aim Trainer Attack Bombsite Simulation. As they complete this simulation, their accuracy and overall score will be recorded. Each stage of the simulation will

increase in difficulty and should take no longer than 5 minutes to complete. Then they will take the pre-test of the McGill Pain Questionnaire – Short Form 2 online through Qualtrics to assess pain quality and intensity. After these two pre-test outcomes are measured, they will receive the second kinesiology tape application which will be the opposite color of their previous KT color. After the tape application, they will have another 3D Aim Trainer Attack Bombsite Simulation trial and practice session for 10 minutes to get used to the feeling of the tape before completing the post-test for the 3D Aim Trainer Attack Bombsite Simulation and the post-test for the Post-test: McGill Pain Questionnaire – Short Form 2. Upon completion of visit 2, participants will receive a Steam gift card of \$15. They will be advised to leave the tape on for no more than five days, as recommended by the kinesiology tape brand Sparthos. This visit will explain the dissemination process and the end-of-study survey for them to complete at home after they have self-removed the 2nd application of the KT.

They will then complete the end-of-study survey, which is an online questionnaire made on Qualtrics allowing multiple-choice responses and comments. This survey asks if they will recommend kinesiology tape to others with the same symptoms and if they felt the kinesiology tape affected their performance and symptoms. The survey is attached. Responses will be de-identified, and the master key will be destroyed.

Ending participation early: If participants want to end the study early, they will be allowed to at any time. Participants who have completed visit 1 of the study will be given a \$15 Steam gift card incentive. Data from visit 1 will be utilized to understand the efficacy of the dorsal application of kinesiology tape in the treatment of carpal tunnel-like symptoms. Since they did not receive the second color in visit 2, their data will not be able to be utilized to understand the color effect on performance or symptoms. Data of participants who did not complete visit 1 or visit 2 will be excluded from the analysis.

Participant Visit 1 and Visit 2 Breakdown

Visit 1 (60 minutes)	Time (minutes)	Description
Introduction and Set-Up	5	Complete consent form, demographics questionnaire, random assignment to group X or Y
Practice Session	10	Initial ABS simulation practice
Performance Pre-test	5	Conduct pre-test using ABS
Pain Pre-Test	5	Administer SF-MPQ-2
1 st KT application	5	Apply 1 st KT. Group X will receive red KT while group Y will receive skin-tone KT.
Practice session with KT	10	Simulation trial and practice with applied KT

Performance Post-test	5	Conduct post-test using ABS with applied KT
Pain Post-test	5	Re-administer SF-MPQ-2 with applied KT
Conclusion and Next Steps	5	Receive \$15 Steam gift card, tape care guidance, and Spartan Tape Guide. Schedule Visit 2 for 12 days later.
Visit 2 (60 minutes)	Time (minutes)	Description
Practice Session	10	Initial ABS simulation practice
Performance Pre-test	5	Conduct pre-test using ABS
Pain Pre-Test	5	Administer SF-MPQ-2
2 nd KT application	5	Apply 2 nd KT. Group X will receive skin-tone KT while group Y will receive red KT.
Practice session with KT	10	Simulation trial and practice with applied KT
Performance Post-test	5	Conduct post-test using ABS with applied KT
Pain Post-test	5	Re-administer SF-MPQ-2 with applied KT
Conclusion	10	Receive \$15 Steam gift card and tape care guidance. Explanation of ESS to be completed online after self-removal of 2 nd KT. Conclude study participation and receive explanation of dissemination process and opportunity to learn self-application of KT.

Statistical Analysis Plan

Quantitative Outcome Measures:

3DAimTrainer – Attack Bombsite Simulation

Qualitative Outcome Measures:

Short-Form McGill Pain Questionnaire 2 (SF-MPQ-2)

End of study survey

Evaluation Times:

Visit 1: Pretest 1, post-test 1

Visit 2: Pretest 2, post-test 2 (12 days from the date of visit 1)

End of study survey will be emailed to participants to complete online (5 days after the date of visit 2)

All data will be stored electronically as documents and data on sheets saved to UNLV 2-factor authentication-protected drives. This includes informed consent forms, screening data, demographic data, questionnaire responses, and performance measures. No video or audio recordings will be obtained. Screening data from non-eligible individuals will not be stored.

Quantitative and qualitative data are to be collected and analyzed separately and integrated during the interpretation stage. Results from the quantitative data will be compared to themes found in the ESS responses to reveal whether the conscious perception and reporting from gamers match the effect it had on their performance and symptoms as indicated by the SF-MPQ-2 and the ABS.

Quantitative data will be analyzed on SPSS software. Wellek and Blettner's (2012) guidelines for crossover statistical analysis will be utilized to guide analysis. A pre-test of the independent t-test of the sums will be performed to verify the assumption of little to no carry-over effect after a washout period of at least 1 week.

If there is no evidence of a significant carry-over effect, the same equation will be completed with an independent t-test of the differences to identify the treatment effect.

Descriptive Analysis

Shapiro-Wilk completed assessing normal distribution of continuous variables

Quantitative Analysis

Follows Wellek and Blettner's (2012) guidelines

Utilizing Parametric test- Independent T-test

Utilizing Non-parametric test- Wilcoxon Rank Sum

Qualitative Analysis

Descriptive analysis and Chi-Squared Test for End of Study Survey multiple choice answers

Categorization Analysis of Comments

Dissemination:

The intended audience for dissemination is the UNLV occupational therapy program and Esport stakeholders.

Short-form McGill Pain Questionnaire – 2

	None: 0 (1)	1 (2)	2 (3)	3 (4)	4 (5)	5 (6)	6 (7)	7 (8)	8 (9)	9 (10)	Worst possible: 10 (11)
1. Throbbing Pain (1)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Shooting Pain (2)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Stabbing Pain (3)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Sharp Pain (4)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Cramping Pain (5)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Gnawing Pain (6)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Hot- burning Pain (7)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Aching Pain (8)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Heavy Pain (9)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Tender (10)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Splitting Pain (11)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Tiring- exhausting (12)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Sickening (13)	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Fearful (14)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
15. Punishing- cruel (15)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
16. Electric- shock Pain (16)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
17. Cold- freezing Pain (17)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
18. Piercing (18)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
19. Pain caused by light touch (19)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
20. Itching (20)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
21. Tingling or 'pins and needles' (21)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>
22. Numbness (22)	<input type="radio"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>

[illegible][illegible]

Attack Bombsite Simulation



End of Study Survey

Q1 Would you recommend kinesiology tape to other esports gamers with similar symptoms? Why?

Yes (1) _____

No (2) _____

Q4 When did the kinesiology tape begin to lose adhesiveness? (take an average between the two tape applications)

1 day (1)

2 days (2)

3 days (3)

4 days (4)

5 days or more (5)

Q5 Would you like to learn how to self-apply kinesiology tape?

Yes (1)

No (2)

Q6 Did you prefer one color of kinesiology tape over the other? If so, which one?

Yes (1) _____

No (2)

Q2 Did the kinesiology tape improve or worsen your SYMPTOMS? How?

Improved (1) _____

Worsened (2) _____

No difference. (3)

Display This Question:

Did the kinesiology tape improve or worsen your SYMPTOMS? How? = Improved

Q2b Which color of the Kinesiology tape improved your SYMPTOMS more? Why?

Red (1) _____

Black (2) _____

No difference (3)

Display This Question:

Did the kinesiology tape improve or worsen your SYMPTOMS? How? = Worsened

Q2c Which color of kinesiology tape worsened your SYMPTOMS more? Why?

Red (1) _____

Black (2) _____

No difference (3)

Q3 Did the Kinesiology Tape improve or worsen your PERFORMANCE in esports games? How?

Improved (1) _____

Worsened (2) _____

No difference (3)

Display This Question:

Did the Kinesiology Tape improve or worsen your PERFORMANCE in esports games? How? = Improved

Q3a Which color of the kinesiology tape improved your PERFORMANCE in esports games more? Why?

Red (1) _____

Black (2) _____

No difference (3)

Display This Question:

Did the Kinesiology Tape improve or worsen your PERFORMANCE in esports games? How? = Worsened

Q3b Which color of kinesiology tape worsened your PERFORMANCE in esports games more? Why?

Red (1) _____

Black (2) _____

No difference (3)

Informed consent

Department of Brain Health

Title of Study: Less Pain, More Game: Efficacy of Red Kinesiology Tape on Carpal Tunnel-Like Symptoms and Performance in Esports Gamers

Investigator(s): Sarah Taing OTD/S, Dr. Donnamarie Krause, OTR/L, PhD

For questions or concerns about the study, you may contact Sarah Taing at unlvresearchesports@gmail.com or Dr. Donnamarie Krause at donnamarie.krause@unlv.edu

For questions regarding the rights of research subjects, or any complaints or comments regarding how the study is being conducted, contact Dr. Donnamarie Krause at donnamarie.krause@unlv.edu .

It is unknown as to the level of risk of transmission of COVID-19 if you decide to participate in this research study. The research activities will utilize accepted guidance standards for mitigating the risks of COVID-19 transmission: however, the chance of transmission cannot be eliminated.

Purpose of the Study

You are invited to participate in a research study. The purpose of this study is to evaluate the efficacy of dorsally applied kinesiology tape (KT) for the treatment and management of Carpal tunnel Syndrome (CTS) in esports gamers and gain insights into the potential psychological effect of red kinesiology tape on the perception of symptoms and performance in first-person shooter games.

Participants

You are being asked to participate in the study because you fit these inclusion criteria: Over 18 years old, can see color vision, reports having numbness, tingling, weakness, or pain in the hands, wrist, or fingers, positive Phalen's test result, passes Ishihara Color Vision Test with a score of at least 12, provides written consent, reports to play esports games over 5 hours a week on average.

You also do not have qualities that fit the exclusion criteria: cognitively impaired, pregnant, history of skin conditions, history of hand conditions other than carpal tunnel syndrome, history of surgery to the wrist, hand, or fingers, currently receiving other forms of physiotherapy. Participants with open wounds on the kinesiology tape application site will also be excluded.

Procedures

If you volunteer to participate in this study, you will be asked to do the following:

Participation in this study requires 2 visits to the UNLV Shadow Lane Campus OT Skills Lab located at 1125 Shadow Ln, Las Vegas, NV 89102. Visits will require no more than 60 minutes of your time and involve kinesiology tape applications, quick performance measures, and questionnaires.

This study follows a randomized controlled crossover design with 2 study arms: red KT and skin tone KT. Each intervention will be applied once and separated by a washout period which will be at least 1 week.

Random Assignment

You will be randomly assigned to either group X or group Y, indicating your sequence of receiving the two treatments (red or skin tone KT). Group X would receive red KT then skin tone KT while group Y would receive skin tone KT then red KT. This will be done by having you select an envelope containing one of the two group assignments.

Outcome Measurements:

- SF- McGill Pain Questionnaire – 2 will give outcomes of pain intensity and quality. It includes adjectives to describe both nociceptive pain and neuropathic pain. Pain descriptors can be categorized into Continuous (throbbing pain, cramping pain, gnawing pain, aching pain, heavy pain, tender), Intermittent (shooting pain, stabbing pain, sharp pain, splitting pain, electric-shock pain, piercing), Neuropathic (hot-burning pain, cold-freezing pain, pain caused by light touch, itching, tingling or "pins and needles", numbness), and Affective (tiring-exhausting, sickening, fearful, punishing-cruel)
- 3D Aim Trainer Attack Bombsite Simulation at easy level difficulty is completed on a Dell PC with a keyboard and mouse setup. It will measure performance in first-person shooter esports games through a collection of overall scores and accuracy percentages. The participants will have to shoot at enemy targets while dodging attacks and surviving to the next stage. Each stage of the simulation will increase in difficulty. The simulation will be completed with the computer set to a grayscale display to eliminate any effect of the colors of the original simulation. Each attempt of the simulation will end after 200 seconds. It will be completed in a private room with only the student researcher present. The simulation is free and can be found here: <https://www.3daimtrainer.com/> Data from this simulation will be stored under the participant's code on a protected Google Sheets document to de-identify participant results. Repeated 4 times during the study.
- End of Study Survey - completed only once online after self-removal of 2nd KT application. This survey will ask about how long the tape lasted before it lost adhesiveness, KT color preference, willingness to recommend KT to others, KT color effect on performance, and KT color effect on CTS symptoms. This will be completed anonymously at home as an additional component of the study to collect qualitative comments related to your experience with the KT. You will also be able to indicate your desire to learn how to self-apply KT. If you indicate an interest in self-application, you will be directed to email the student researcher.

Visit 1:

During the first visit, you will select an envelope containing your random assignment to either group X or Y and complete the online demographics questionnaire. Then you will have 10 minutes to practice on the 3D Aim Trainer Attack Bombsite Simulation to understand the simulation goals and interface. During these 10 minutes of practice, you can edit the control settings to suit your preferences or utilize the default settings. You will then complete the pre-test of the 3D Aim Trainer Attack Bombsite Simulation. As you complete this simulation, your accuracy % and overall score will be recorded. Each stage of the

simulation will increase in difficulty and should take no longer than 5 minutes to complete. Then you will take the pre-test of the SF- McGill Pain Questionnaire – 2 online through Qualtrics to assess pain quality and intensity. After these two pre-test outcomes are measured, you will receive the first kinesiology tape application. The color will be determined by the group assignment from the envelope. After the tape application, you will have another 3D Aim Trainer Attack Bombsite Simulation trial and practice session for 10 minutes to get used to the feeling of the tape before completing the post-test for the 3D Aim Trainer Attack Bombsite Simulation and the post-test for the Post-test: SF- McGill Pain Questionnaire – 2. You will be advised to leave the tape on for no more than five days, as recommended by the kinesiology tape brand Sparthos. You will be educated on Spartho's recommended methods for tape removal and receive an emailed PDF of the Spartan Tape Kinesiology Taping Guide for more information on the product. The second visit will be scheduled at the end of this visit. It must be 12 days from the date of visit 1 to allow for at least a 7-day wash-over period in the case that the tape was kept on for a maximum of 5 days.

Visit 1 (no more than 60 minutes total): Meeting breakdown in order.

- (5 minutes) Receive a copy of the signed consent form and an explanation of the visit. Complete the demographics questionnaire and obtain random assignment by selecting an envelope containing the group assignment to X or Y.
- (10 minutes) Simulation trial and practice
- (5 minutes) Pre-test: 3D Aim Trainer Attack Bombsite Simulation
- (5 minutes) Pre-test: SF- McGill Pain Questionnaire – 2
- (5 minutes) KT application 1
- (10 minutes) Simulation trial and practice with kinesiology tape - 1
- (5 minutes) Post-test: 3D Aim Trainer Attack Bombsite Simulation
- (5 minutes) Post-test: SF- McGill Pain Questionnaire – 2
- (5 minutes) Meeting conclusion

Visit 2:

The second visit will follow the same breakdown as the previous visit. You will have 10 minutes to practice on the 3D Aim Trainer Attack Bombsite Simulation to gain an understanding of the simulation goals and interface. During these 10 minutes of practice, you can edit the control settings to suit your preferences or utilize the default settings. You will then complete the pre-test of the 3D Aim Trainer Attack Bombsite Simulation. As you complete this simulation, your accuracy % and overall score will be recorded. Each stage of the simulation will increase in difficulty and should take no longer than 5 minutes to complete. Then you will take the pre-test of the SF- McGill Pain Questionnaire – 2 online through Qualtrics to assess pain quality and intensity. After these two pre-test outcomes are measured, you will receive the second kinesiology tape application which will be the opposite color of your previous KT color. After the tape application, you will have another 3D Aim Trainer Attack Bombsite Simulation

trial and practice session for 10 minutes to get used to the feeling of the tape before completing the post-test for the 3D Aim Trainer Attack Bombsite Simulation and the post-test for the Post-test: SF-McGill Pain Questionnaire – 2. Upon completion of visit 2, you will receive a Steam gift card of \$15. You will be advised to leave the tape on for no more than five days, as recommended by the kinesiology tape brand Sparthos. This visit will explain the dissemination process and the end-of-study survey for you to complete at home after you have self-removed the 2nd application of the KT.

You will then complete the end-of-study survey, which is an online questionnaire made on Qualtrics allowing multiple-choice responses and comments. This survey asks if you would recommend kinesiology tape to others with the same symptoms and if you felt the kinesiology tape affected your performance and symptoms. Responses will be de-identified

Visit 2 (no more than 60 minutes total): Meeting breakdown in order.

- (10 minutes) Simulation trial and practice
- (5 minutes) Pre-test: 3D Aim Trainer Attack Bombsite Simulation
- (5 minutes) Pre-test: SF- McGill Pain Questionnaire – 2
- (5 minutes) KT application 2
- (10 minutes) Simulation trial and practice with kinesiology tape - 2
- (5 minutes) Post-test: 3D Aim Trainer Attack Bombsite Simulation
- (5 minutes) Post-test: SF- McGill Pain Questionnaire – 2
- (10 minutes) Meeting conclusion: You will be informed of an Online End of Study Survey which should take no more than 5 -10 minutes that you should complete after you remove this second tape application (3-5 days after this visit). Participants who indicated interest in learning KT self-application on the End of Study Survey will be prompted to email the student researcher. The process of dissemination of results will be explained.

Ending participation early

If you want to end the study early, you will be allowed to at any time. Participants who have completed visit 1 of the study will be given a \$15 Steam gift card incentive. Data from visit 1 will be utilized to understand the efficacy of the dorsal application of kinesiology tape in the treatment of carpal tunnel-like symptoms. Since you would not receive the second color in visit 2, your data would not be able to be utilized to understand the color effect on performance or symptoms. Data of participants who did not complete visit 1 or visit 2 will be excluded from the analysis.

Benefits of Participation

There may be direct benefits to you as a participant in this study such as decreased perception of pain related to carpal tunnel-like symptoms and improved performance in games. You may gain insight into how the color red may affect your performance psychologically. You will also gain knowledge of Kinesiology tape and the opportunity to learn self-application of KT after the study. There are also benefits to society such as a greater understanding of the psychological effect of color on human cognition and performance as well as the effectiveness of dorsally applied kinesiology tape as a conservative treatment option for CTS-like symptoms. This allows a better understanding of which populations or circumstances allow for kinesiology tape to be most effective and enables occupational therapists to better treat CTS-like symptoms in esports communities with consideration of the effect of color.

Risks of Participation

There are risks involved in all research studies. This study results in no further than minimal risks. Risks associated with kinesiology tape application are minimal skin irritation and in the case of irritation, you are taught how to self-remove the tape. You can end participation in the study at any time. You also experience minimal risk of data disclosure which comes with participation in any study. There are no anticipated legal, financial, social, or personal effects on participants of accidental data disclosure.

Cost /Compensation

There may not be a financial cost to you to participate in this study. Participation in this study only requires 2 in-person visits to the UNLV Shadow Lane Campus OT Skills Lab located at 1125 Shadow Ln, Las Vegas, NV 89102 in which You will receive free taping services. Each visit will require no more than 60 minutes of your time and involve kinesiology tape applications, quick performance measures, and questionnaires. You may receive a \$15 incentive for completion of each in-person visit (2) for a total of \$30 if you complete both in-person visits. You will input you email on the digital gift card steam website to receive the gift card.

Confidentiality

All information gathered in this study will be kept as confidential as possible. No reference will be made in written or oral materials that could link you to this study. Your identity will not be presented in any written or oral materials related to the study. All outcome measures will be collected through your participant ID number. The end-of-study survey will be completely anonymous with no identifiable data collected at all. If a participant must be referenced in the study, a participant ID number will be used. Another researcher not involved in the study will be responsible for de-identification. The linking identifiable information, written consent forms, code key, and outcome measurements will be stored in HIPPA-compliant 2 Google drives and through Qualtrics. Both require a UNLV email login which requires 2-step authorization to ensure no leaking of data. Only the primary investigator and primary contact will have access to this data. Any physical copies will be shredded and disposed of. Electronic data will be stored for only 3 years after the completion of the study.

Voluntary Participation

Your participation in this study is voluntary. You may refuse to participate in this study or in any part of this study. You may withdraw at any time without prejudice to your relations with UNLV. You are encouraged to ask questions about this study at the beginning or any time during the research study.

Participant Consent:

I have read the above information and agree to participate in this study. I have been able to ask questions about the research study. I am at least 18 years of age. A copy of this form has been given to me.

Signature of Participant

Date

Participant Name (Please Print)

References

Wellek, S., & Blettner, M. (2012). On the Proper Use of the Crossover Design in Clinical Trials. *Deutsches Arzteblatt Online*, 109(15). <https://doi.org/10.3238/arztebl.2012.0276>