

Introduction

- Elastic tape has been used for a variety of conditions in physical therapy ranging from edema control, postural control, pain modulation, joint support and neuromuscular facilitation
- Elastic tape has been used in all types of population from infants all the way to geriatrics
- Changes in healthcare and reimbursement policies are demanding more evidence based practice making it important that the use of certain therapeutic techniques be supported by research
- Kinesio Tape (KT) is the most common type of elastic tape mentioned/studied in the literature
- Evidence to support KT is either lacking or of poor quality and, therefore, results from those studies may not be valid or consistent in all populations
- This research will explore the physiologic effect behind elastic tape, more specifically RockTape
- Decompression effects allows for increases in blood flow and neuromuscular facilitation
- This technology is the foundation of elastic tape and in part may play a major role in helping athletes to the general population
- A gap exists in the literature with regards to the impact of decompression
- This makes it difficult for researchers to explore the true impacts of elastic tapes

Objective

- Testing whether RockTape application over the quadriceps muscles compared to placebo tape (Elastikon tape) will produce increases in velocity when kicking a soccer ball.

Methods

- Randomized trial with three conditions: RockTape, placebo tape (Elastikon), and control (no tape)
 - Participants asked to pick number 1-99
 - Numbers previously randomly assigned with computer randomizer into three categories
- Population: FGCU men's and women's club soccer teams
 - 51 participants
 - Participants being treated for a lower quarter injury (low back and below) will be excluded
 - Recent injuries no longer being treated were cleared to participate in study
- All participants completed a dynamic warm up of 5-8 minutes which included:
 - Butt kicks, high knees, over-unders, high kicks, power skips, karaoke hip/trunk mobility, walking lunges with trunk rotation
- After warm up participants were asked to complete five warm up kicks of increasing intensity with dominant leg
- After warm up kicks, participants completed 5 kicks to be averaged for baseline data
- After baseline data was completed, each participant chose a # 1-99 to place them into one of the 3 experimental conditions
- Taping groups had RockTape or Elastikon placed from inferior AIIS to 1" superior to patella

Methods Con't

- RockTape was applied with 50% stretch whereas no stretch with placebo
- Once taped, 5 more kicks were collected for experimental data
- One researcher applied tape for all participants while the other completed data collection with the radar gun for all participants

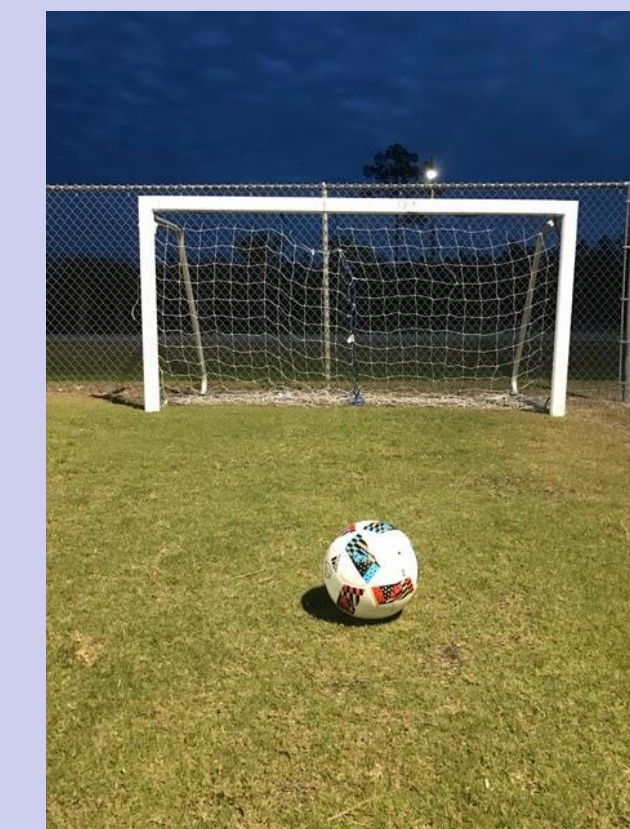


Picture 1: RockTape application



Picture 2: Placebo application

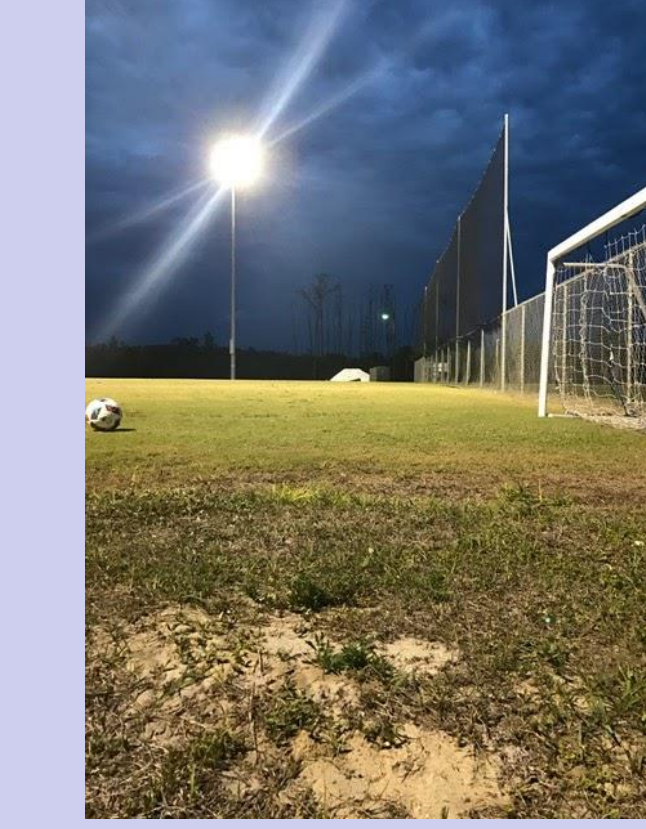
- Strides were subjective to each individual, but a maximum of 3 steps were allowed prior to striking the ball
- Each kick velocity was measured with a JUGS R1000 doppler radar gun and recorded on individual data sheets
 - The radar gun was placed on a tripod directly behind the goal at a height of 1.0 m off the ground and angled directly at the soccer ball



Picture 1: Front view



JUGS radar gun



Picture 2: Side view

Results

	Group	Participants	Mean (mph)	SD	Min	Max
Baseline Data	RockTape	17	51.48	5.51	41.20	65.80
	Placebo	18	50.41	6.63	39.20	61.40
	Control	16	50.48	7.06	34.80	63.80
Experimental Data	RockTape	17	50.87	5.64	40.20	64.00
	Placebo	18	50.77	7.00	38.00	63.60
	Control	16	50.48	7.06	34.80	63.80

Table 1: Average kick velocities for baseline and experimental conditions

	Levene Statistic	df1	df2	Significance
Baseline	0.625	2	47	0.540
Experimental	0.576	2	47	0.566

Table 2: Homogeneity of Variance

		Sum of Squares	df	mean square	F	p-value
Baseline Data	between groups	12.040	2	6.020	0.146	0.865
	within groups	1938.60	47	41.247		
	total	1950.64	49			
Experimental Data	between groups	1.186	2	0.593	0.014	0.986
	within groups	2039.95	47	43.403		
	total	2041.14	49			

Table 3: Repeated measures ANOVA results

Data Analysis

- The data was analyzed using SPSS software
- Three-way repeated measures ANOVA was performed to analyze differences in ball velocity between RockTape, Elastikon tape, and control groups for baseline and experimental conditions.

Discussion

- Results indicated that RockTape showed no improvement in velocity of soccer kicks
- RockTape had a net negative impact on kick velocity while Elastikon had a net positive impact, neither of which were significant
- Limitations:
 - Tapes inability to adequately stick to players with hairier legs,
 - Surface area of quadriceps covered by tape
 - Angle of the kicks when the ball crossed the path of the radar gun
 - Making sure players hit the ball towards the middle of the goal not the corners
 - Inaccurate radar gun readings
 - Conflicting schedules with baseball team to borrow radar gun
 - Inability to include collegiate soccer players during our data collection window
- Future research involving elastic tape and measuring velocity should take into account these limitations. Working proactively to diminish any issues that may arise would be a key factor in similar studies.
- Preferred method of collecting data was having participants come one at time rather than in groups. It was more efficient and took less time out of each participants practice time.



FGCU's Men's Club Team



FGCU's Women's Club Team

Conclusions

- Analyzing the data showed that RockTape placed at 50% tension on the anterior thigh over the rectus femoris of the quadriceps did not have a significant difference on ball velocity during near maximal effort kicks by college club soccer players.
- Results also showed a net negative impact on ball velocity with RockTape and a net positive impact on ball velocity with placebo tape.
- Suggestions for future research to improve upon our study include more surface area coverage with RockTape for the majority of the quadriceps, rather than one strip partially covering such a large muscle, including high skill athletes to decrease variance between subjects, removing hair to increase adhesion of tap