

## Effects of 8 Weeks of Proprioceptive Training with and Without Taping on Recurrence of Lateral Ankle Sprain in Judokas

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**Taping and proprioceptive training are widely reported beneficial in the treatment for ankle sprains. Several studies reported that the proprioceptive sense training is a potential therapy for improving impaired neuromuscular function. The intention of this article was to evaluate Taping followed by proprioceptive training versus proprioceptive training without taping for Ankle Sprains recurrence rate. All sprained judokas with acute ankle sprains were advised for standard procedure (ice, rest, elevation, and compression with a compressive bandage). Initially 30 sprained judokas were categorized randomly into two groups and then underwent studies for 8 weeks: one group was treated with tape and proprioceptive training and the other only with proprioceptive training. Both groups were followed up for duration of six month. The study indicated that no significant difference between taping and without taping groups. Recurrence rate of acute ankle sprain shows no significant linkage to employment of taping or its absence. Further studies with greater number of participants are suggested.**

**Keywords:** Ankle Sprain; Athletic Tape; Proprioceptive.

For professional judokas ankle sprain is among the main concerns of ankle injuries, during the sports activity a sudden twist can result in ankle sprain which is considered as a common musculoskeletal injury<sup>1</sup>. Generally 50% of the injuries are due to sport activities in which 75% of the etiology is traumatic inversion<sup>2</sup>. Based on the signs and symptoms sprains can be classified into three: Grade I ankle sprain is defined as lack of a hematoma and sensitivity at the anterior lateral ligament. Grade II is considered as noticeable damage to lateral ligaments and existence of a hematoma at the anterior lateral ligament without instability (grade II) and grade III is defined as grade II with instability. It is proved that proprioceptive training is an effective

method for reducing recurrence of Ankle sprain<sup>3-4</sup>. Proprioceptive training is defined as an exercise which guide our body to maintain the proper position and control a joint. It focuses on the use of somatosensory signals such as proprioceptive or tactile afferents in the absence of information from other modalities such as vision. Proprioception sense is so important to prevent sport injuries and it seems that proprioception sense can play an essential role in order to maintain proper body position especially in unpredicted sport activities<sup>5</sup>. In the United States, around 23,000 people per day suffered from sprains which leads to 8,400,000 cases annually and 5-7 cases per 1000 per day in EU suffered from ankle sprains<sup>6</sup>. Mainly ankle injuries from sports manifest in the form of lateral

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ankle ligaments, and 77% as ankle sprains<sup>7</sup>. Usually, the primary treatment is rest with ice, and limiting the amount of weight bearing and walking on the injured ankle. In order to reduce swelling, the leg can be elevated and crutches are also recommended to reduce the risk of further trauma to the injured ligaments. Taping is the most common functional treatment approach applied worldwide and proved the better results compare to plaster immobilization and elastic bandage<sup>1</sup>. Many Researchers assessed the role of Taping in the treatment of Ankle sprain. The results of their studies showed that taping can be effective in the treatment of Ankle sprain. However, until now no one evaluates the effect of proprioception training with taping on recurrence of lateral Ankle sprain. The main goal of our study was to assess that can add taping to proprioception training to be effective in reducing recurrence of lateral Ankle sprain or not?

### **Objectives**

The objective of this study was to evaluate the effectiveness of proprioceptive training in presence and absence of ankle taping for eight weeks of treatment in judoka and its efficacy to prevent the recurrence of ankle sprain after six months.

### **Methods**

This was a randomized controlled trial conducted for 8 weeks and followed up for one years in the Tehran the capital city of Iran. The professional male judokas who aged between 20 to 30 and did technical training at least 4 sessions weekly and suffered from grade I or II ankle sprain enrolled in our Study. Judokas with grade III of ankle sprain were excluded from our study<sup>8</sup>. Research approach for our study is a quantitative approach that involves the generation of data in a quantitative form that can be subjected to rigorous quantitative analysis in a formal and rigid fashion. The Sample size was 30 in two groups of 15 members.

### **Proprioceptive training**

At first of the training session, warm up were executed by judokas with emphasis on Ankle joint. Then judokas were trained to use Tilt board correctly in Sagittal plane for two minutes. After that, we asked them to use Tilt board for 1 minute for 4 set in every session with rest of 10 seconds

between every set. The proprioception training was executed samely in both groups<sup>8</sup>.

### **Taping group**

Judokas underwent taping treatment along with proprioceptive training for eight weeks except for sleeping time and taking shower. The athletic tape was reapplied at every session of training or when judokas indicated that stability was lost from the Athletic tape or for hygiene purposes or skin related disorders. The Skilled physiotherapist did the taping of the outpatient clinic. The Standard method were used by physiotherapist in order to prevent from excessive movement in Subtalar joint during proprioceptive and Technical training

### **Nontaping group**

Judokas in this group underwent proprioceptive training without taping for the same time as the first group and proprioceptive training instructed under the careful supervision of an expert physiotherapist.

## **RESULTS**

The data collected in this study is analyzed statistically by computing percentages, descriptive statistics viz., mean and standard deviation

The P value 0.409 indicates that there was no significant relationship between the outcomes of two groups and taping does not create any significant difference in prevention of the ankle sprain recurrence rate.

## **DISCUSSION**

Recurrent ankle sprains are a major cause of disability and reduce the judokas performance to a great extent<sup>9</sup>. Professional health care system examined pharmacological and nonpharmacological methods, to find the reliable solution for prevention of recurrence and reducing pain. In our study, one group underwent the treatment with taping and the other without taping, both for eight weeks. proprioception deficit in athletes with the history of Ankle sprain and functional instability is reported<sup>10-11</sup>. It seems that the results of different studies about the role of Taping in injury prevention are controversial. Results of previous studies showed that Taping can be effective in pain control after Ankle sprain<sup>1</sup>.

**Table 1.** Descriptive table of weight variable

Group	Mean	N	Std. Deviation	Median	Minimum	Maximum	Range	Variance	Kurtosis	Skewness
With taping	87.2733	15	13.03761	90.7000	60.70	104.00	43.30	169.979	-.253	-.587
Without taping	78.7200	15	15.49526	74.0000	60.30	105.40	45.10	240.103	-.826	.555
Total	82.9967	30	14.72723	81.7500	60.30	105.40	45.10	216.891	-1.164	-.039

**Table 2.** Descriptive table of Height variable

Group	Mean	N	Std. Deviation	Median	Minimum	Maximum	Range	Variance	Kurtosis	Skewness
With taping	1.7593	15	.07805	1.7600	1.59	1.88	.29	.006	.255	-.632
Without taping	1.7320	15	.12434	1.7400	1.55	1.93	.38	.015	-.828	.217
Total	1.7457	30	.10295	1.7500	1.55	1.93	.38	.011	-.459	-.134

**Table 3.** Descriptive table of Age variable

Group	Mean	N	Std. Deviation	Median	Minimum	Maximum	Range	Variance	Kurtosis	Skewness
With taping	25.6000	15	2.13140	26.0000	21.00	29.00	8.00	4.543	.070	-.466
Without taping	25.2000	15	2.56905	26.0000	21.00	29.00	8.00	6.600	-1.311	-.168
Total	25.4000	30	2.32824	26.0000	21.00	29.00	8.00	5.421	-.859	-.312

**Table 4.** Descriptive table of BMI variable

Group	Mean	N	Std. Deviation	Median	Minimum	Maximum	Range	Variance	Kurtosis	Skewness
With taping	28.0013	15	2.00343	28.6896	24.01	31.05	7.04	4.014	-.305	-.604
Without taping	25.9748	15	1.91531	25.1044	22.75	29.20	6.45	3.668	-1.158	.110
Total	26.9880	30	2.18420	27.2478	22.75	31.05	8.31	4.771	-1.017	-.124

BMIMEAN \* Group Cross tabulation  
Count

		Group		
		With taping	Without taping	Total
BMIMEAN	Normal	2	6	8
	Overweight	11	9	20
	Obese	2	0	2
Total	15	15	30	

VAR00005 \* Group Cross tabulation

		Group			
		With taping	Without taping		
<b>Total</b>					
VAR00005	Injured	Count	12	10	22
		Expected Count	11.0	11.0	22.0
	Not injured	Count	3	5	8
		Expected Count	4.0	4.0	8.0
Total	Count	15	15	30	
	Expected Count	15.0	15.0	30.0	

		Chi-Square Tests				
		Value	df	Asump. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square		.682 <sup>a</sup>	1	.409		
N of Valid Cases		30				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 4.00.

b. Computed only for a 2x2 table

Kemler assessed the effect of Taping vs Bracing on recurrence of the lateral ankle sprain. Both methods were effective for reducing recurrence of lateral Ankle sprain<sup>12</sup>. Results of another study showed that Taping is not effective in proprioception enhancement in healthy persons<sup>13</sup>. In another study, Robbins showed that Taping can Enhance Proprioception sense<sup>14</sup>. One may conclude that taping probably has more than a psychological effect in the prevention of injury. Results of our study showed that a combination of Athletic Taping with proprioceptive training can be effective in reducing recurrence of lateral Ankle sprain. This effectiveness can be because of proprioception enhancement in our Taping group. Another reason for this effect can be because of that Athletic Tape can prevent excessive movement in Subtalar Joint during proprioceptive and Technical training.

## CONCLUSION

The main conclusion of this study is that the both results of both groups are identical and shows no significant difference between two practices. However, there is a clear need for further work to determine best method for prevention of recurrence of lateral ankle sprain among Athletes.

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