

## *Case Studies: Treatment of 2nd Degree Ankle Sprains*

### *Using Modalities Including Kinesio-Tape*

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Ankle sprains have been the bane of athletic trainers since the beginning of the profession. Garrick (1997) relates the importance of early mobilization, contrast baths, strength exercise, and on return to activity, prophylactic bracing. Traditionally (Trojian and McKeag, 1998) ankle sprains are treated with the RICE method. The treatment outlined in these case studies, is designed to facilitate the RICE method and reduce the amount of time lost from activities of daily living. The following two case studies are presented as a stimulus to future research and treatment

protocols.

#### HISTORY

Two American Football players suffered second degree ankle sprains within 24 hours of each other and were assessed by the same physician.

1) During an evening practice, on an artificial surface during two-a-days, a wide receiver inverted his left ankle medially when planting his left foot and changing directions to his right while running at full speed. He immediately developed an effusion superior to his lateral malleolus.

2) The following night, on the same artificial surface during two-a-days a defensive end was attempting to move to his left and felt his toe cleats get caught in the turf. He reported that his left foot plantar flexed and inverted. He began a slow effusion post injury.

#### DIAGNOSIS

Both athletes were examined within 24 hrs. post injury by the team orthopedic physician.

- 1) Left ankle, second degree inversion sprain of the calcaneo-fibular and anterior talofibular ligaments.
- 2) Left ankle, second degree inversion sprain of the anterior talofibular and calcaneo-fibular ligaments.

#### MANAGEMENT

- 1) Initially a cursory examination of the athlete was performed, then the athlete was allowed to attempt to “walk off the injury”. After unsuccessfully attempting to return to play, the athlete was examined by the team orthopedist and injected with a dose of WYDASE. He was then treated with the accompanying treatment program.
- 2) Immediately post-injury, the athlete was compressed with a crushed ice pack and an elastic wrap. He was evaluated by the medical staff, then treated with the accompanying treatment program.

Both athletes were managed post injury with the following outlined program (Goo,1997).

#### ACUTE (0 to 72 hours)

##### 0 to 24 hours

- Rest, ice, compression, elevation (RICE)
- Crutches
- Electrical stimulation using Microcurrent 0.3 Hz. 10 minutes followed by 1.0 Hz. for 10 to 20 minutes.
- Cold bath with compression 10 to 20 minutes
- Kinesio-tape: anterior, posterior, medial and lateral lymphatic drainage strips

The athletes were sent home with crutches, appropriate compression (double thickness TUBIGRIP™) /immobilization and appropriate pain medication. While at home the athlete should keep his ankle elevated and iced 20 minutes of every hour. If it is not possible to ice the ankle we recommend that the athlete keep his ankle elevated and compressed as much as possible. If compression and elevation becomes too painful we will allow the athlete to cycle the periods of compression and elevation. We also instruct the athlete to gently plantar and dorsi-flex their ankle in a pain-free ROM. If they are able, we have them do the alphabet. We

recommend the athlete sleep with light compression (single thickness TUBIGRIP™) from below the knee extending over the toes.

24 to 72 hours

- Electrical stimulation using an interferential current at 80-150 Hz.
- Lower Leg Lymphedema massage 10 min. anteriorly, 5 to 10 posteriorly, 5 to 10 min anteriorly
- ROM active to active resistive as tolerated 3 x 12 Plantar Flexion, Dorsi Flexion, Eversion (inversion if \_\_\_\_\_ eversion sprain)
- Cold bath with compression 10 to 20 minutes
- Repeat 2 to 3 times if possible
- Continue RICE and Kinseo-Tape

POST-ACUTE (when acute post traumatic symptoms subside)

- Modalities as needed.
- Lower Leg Lymphedema massage 5 - 10 min. anteriorly, 5 to 10 posteriorly, 5 to 10 min anteriorly
- Kinesio tape: Once the swelling has reduced I use only the anterior lymphatic drainage strip.
- Contrast Whirlpools
- ROM: active
- BAPS board 1 x 50 clockwise rotations, counterclockwise rotations, dorsiflexion/plantar flexion, inversion eversion.
- PRE (graduating resistance as tolerated):
  - 3 x 20 Dorsiflexion
  - 3 x 20 Dorsiflexion/external rotation
  - 3 x 20 Dorsiflexion/internal rotation (eversion sprains only)
  - 2 x 15 Plantar flexion
  - 2 x 15 Plantar flexion w/ femur internally rotated
  - 2 x 15 Plantar flexion w/ femur externally rotated
- Slantboard: 3 minutes
- Stabilization: Stand on toes of the injured foot for a total of 3 minutes with the longest repetition being no longer than 1 minute.

- Cardiovascular: Minimum of 30 minutes daily
- Open kinetic chain exercises when walking and straight line jogging can be done with normal gait.
- Follow with modalities as needed.

## RESULTS

- 1) The morning post injury, the athlete had diffuse 1+ effusion about his ankle joint. He was kept on crutches for three days post injury until his normal gait. The majority of the swelling was dissipated 4 days post injury. On the 5<sup>th</sup> day his Manual Muscle tests were 4/5 or better bilaterally and he was allowed to jog. Seven days post injury was able to change direction with moderate pain over the affected area. Between day ten and day eleven the athlete had a significant reduction of his symptoms. Eleven days post injury he returned to full practice with his ankle taped prophylactic with athletic tape. He reported no pain over the affected area and no effusion was evident.
- 2) For two days post injury the athlete had between 1 and 2 plus effusion about his ankle joint with the degree of swelling dependent on how much time he kept his ankle elevated. This athlete demonstrated the ability to walk without a limp the second day post injury. The third day after the injury we were able to minimize the swelling and on the following day he began to jog. Improvement followed for the next several days. On the tenth day post injury he reported that his ankle felt much better and returned to full practice with his ankle taped prophylactic with athletic tape. This athlete continued to have effusion after returning to practice.

## DISCUSSION

This treatment protocol has provided our training room with significant improvement over the RICE method. It is important to note that symptom reduction between the day before return to play and the day the athlete returns is dramatic. Initially we thought the time spent with the athlete during the lymphedema massage it was with the athlete was a deciding factor. However when we used the same protocol on athletes without Kinesio Tape the time in which the athlete was returned to play increased.

This protocol does not depend only on one particular modality. The combination of the different types of modalities with the Kinesio Tape reduces the time in which post-injury symptoms subside and are controlled. We have noted that when we do not use the Kinesio Tape,

the post-injury symptoms tend to abate at a slower rate.. Through observation it seems that the effectiveness of the modalities is enhanced with the use of Kinesio Tape The most significant result is that we have been successful in returning athletes to competition between 10 to 14 days with minimum loss of function.. Further research needs to be done on how much Kinesio Tape does or does not improve the effectiveness of various modalities.

#### REFERENCES

1. Garrick JG: The frequency of injury ,mechanism of injury, and epidemiology of ankle sprains. Am J Sports Med 1977;5(6):241-242
2. Goo, Jayson. Personal interview. 15 May 1998. Murray, Heather. Personal Conversation. 15 May 1998.
3. Trojian TH, McKeag DB: Ankle sprains: expedient assessment and management Phys and Sports Med 1998;26(10): <http://www.physsportsmed.com/issues/1998/10Oct/mckeag.htm>