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Conservative Treatment of Anterior Cruciate Ligament Deficiency

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Conservative Treatment of Anterior Cruciate Ligament Deficiency

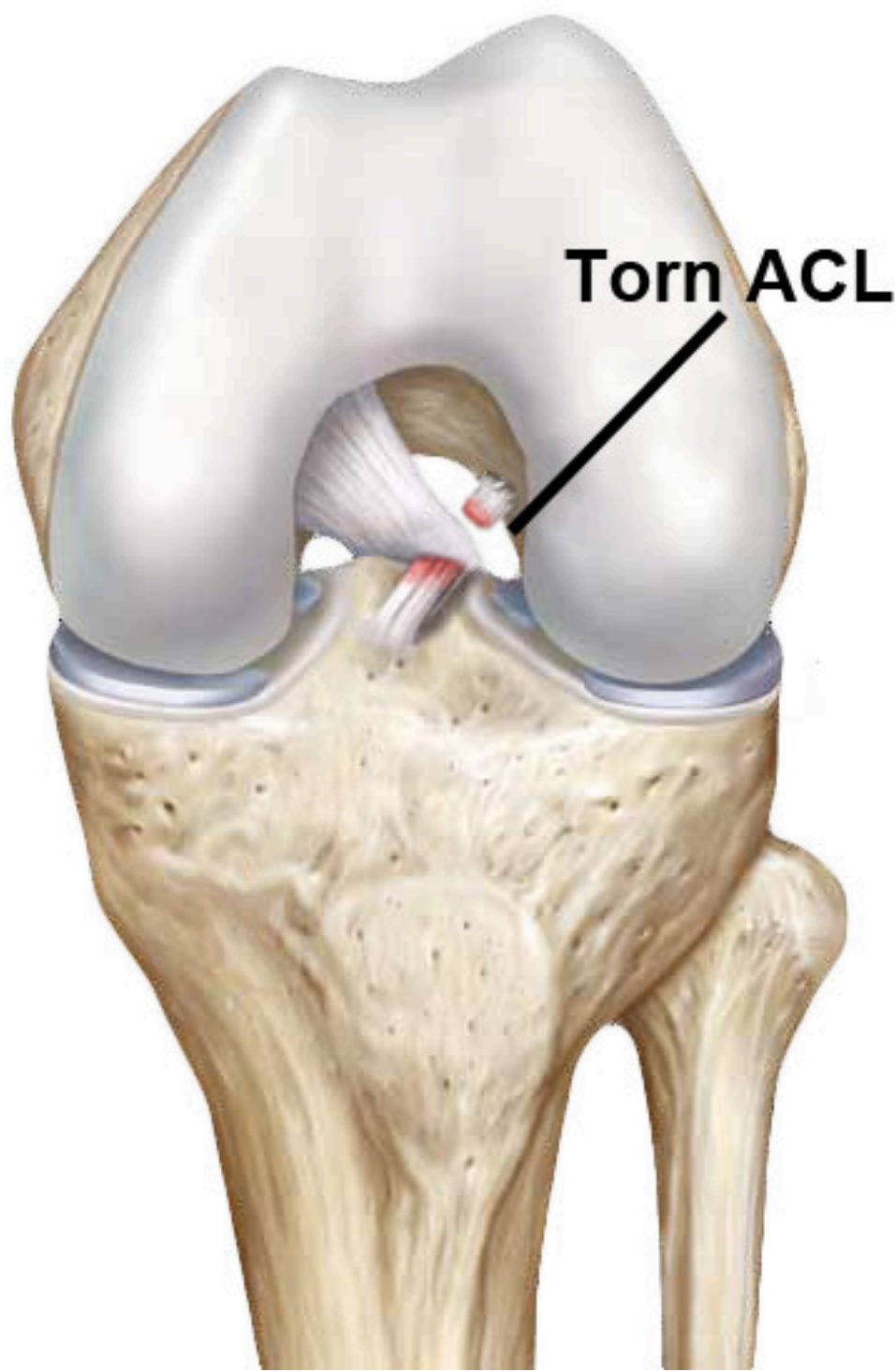
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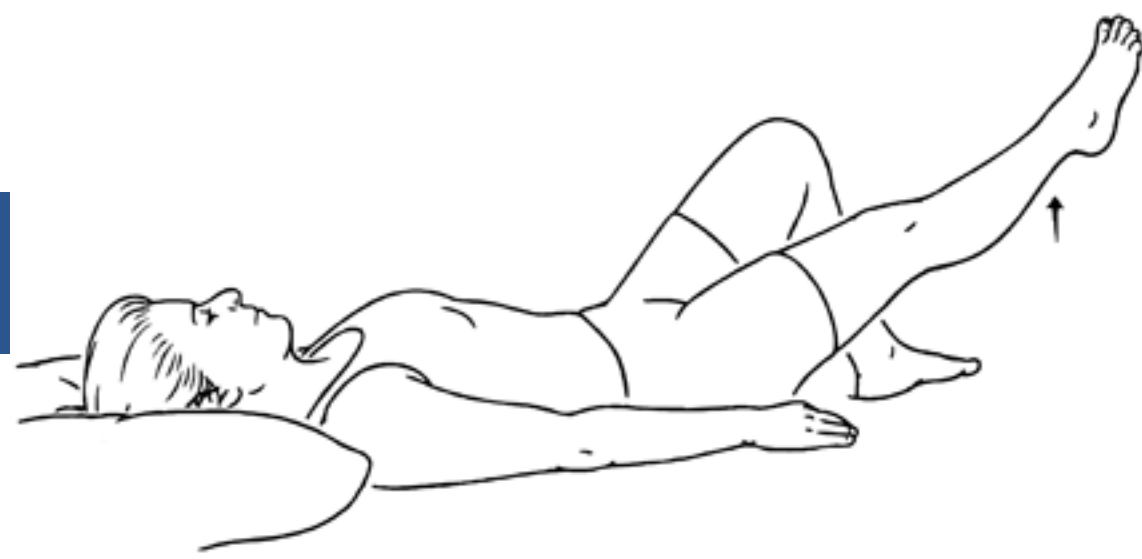
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Introduction

One of the most common knee injuries is a tear or sprain to the anterior cruciate ligament. The ACL is responsible for preventing forward translation of the tibia from the femur. It is one of the four major stabilizing ligaments of the knee. The ACL can be injured in pivoting sports such as in soccer, when the foot is planted and the knee twists, or in basketball, when landing awkwardly from a jump. Female athletes are three to nine times more likely to sustain an ACL injury compared to males. Regardless of age and activity level, the initial treatment after an ACL injury is rest, ice and usually crutches. Unlike the medial collateral ligament and posterior cruciate ligament, tears of the ACL frequently require surgical treatment. For individuals who choose not to have surgery, rehabilitation of the injured knee is frequently recommended to restore as much function as possible and help prevent instability. Rehabilitation focuses on strengthening the muscles around the knee in order to provide better support, control and stability. Some athletes may choose a non-surgical approach to finish a sports season and have reconstructive surgery at a later time. This is not recommended for most sports but can be successful in single plane sports that require minimal pivoting or side to side movements like sprinting athletes and designated hitters in baseball and softball.



<http://www.prestigesportsmedicine.com/wp-content/uploads/2011/03/ACL-Torn2.jpg>



http://www.seniorabilitiesunlimited.com/fallprevention/fallPreventionImages/straight_leg_raise.gif

Purpose

The purpose of this literature review is to present a simple protocol for the treatment of Anterior Cruciate Ligament deficiency for one plane athletes like some track athletes and baseball and softball designated players whom defer surgical intervention until after the season is completed.

References

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http://www.bodybuilding.com/for/images/2006/mahler78_boxquat2.jpg

Exercise Protocol

When working with patients always evaluate their full range of motion and note what ranges or activities that cause pain, so that provided exercises do not heighten pain levels. Below are examples of progressive exercises that are meant to help strengthen the musculature surrounding the knee meant to stabilize the knee during activity. If the exercise is causing the patient pain, then the exercise must be modified or not done again until the patient has no pain with performance of said exercise.

Stage of rehabilitation

Exercises

Stage 1 (Injury – 2 weeks)

- Controlling edema/ swelling and pain
- Quadriceps control with Russian electrotherapy with straight leg raises
- Active knee flexion
- Unloaded cycling for AROM
- Cryotherapy

Stage 2 (1 – 2 weeks)

- Can only progress if girth measurements are decreasing and ROM is beyond 90° flexion without pain.**
- Quadriceps control (Russian electrotherapy with straight leg raises
 - Hip flexion/ extension (Hamstring curl)
 - Unloaded cycling
 - Cryotherapy

Stage 3 (3 weeks)

- Can only progress if girth measurements are decreasing and ROM is still beyond 90° flexion without pain.**
- Squats with 15 – 20% body weight
 - Hip and knee extension
 - Terminal knee extension
 - Seated hamstring curls with cables
 - Single leg balance / calf stretch
 - Clamshells
 - Cryotherapy

Stage 4 (4 – 5 weeks)

- Can only progress if girth measurements are decreasing and ROM is still increasing beyond 90° flexion without pain.**
- Box squats / goblet squats
 - Hip and knee extensions
 - Terminal knee extensions
 - Hip thruster / single leg hip lift
 - Supine hip extension leg curl
 - Single leg squat rear foot elevated
 - Reverse slide board lunges
 - Single leg standing off a box
 - Mini band box for 1 – 2 minutes

Stage 5 (Addition of brace)

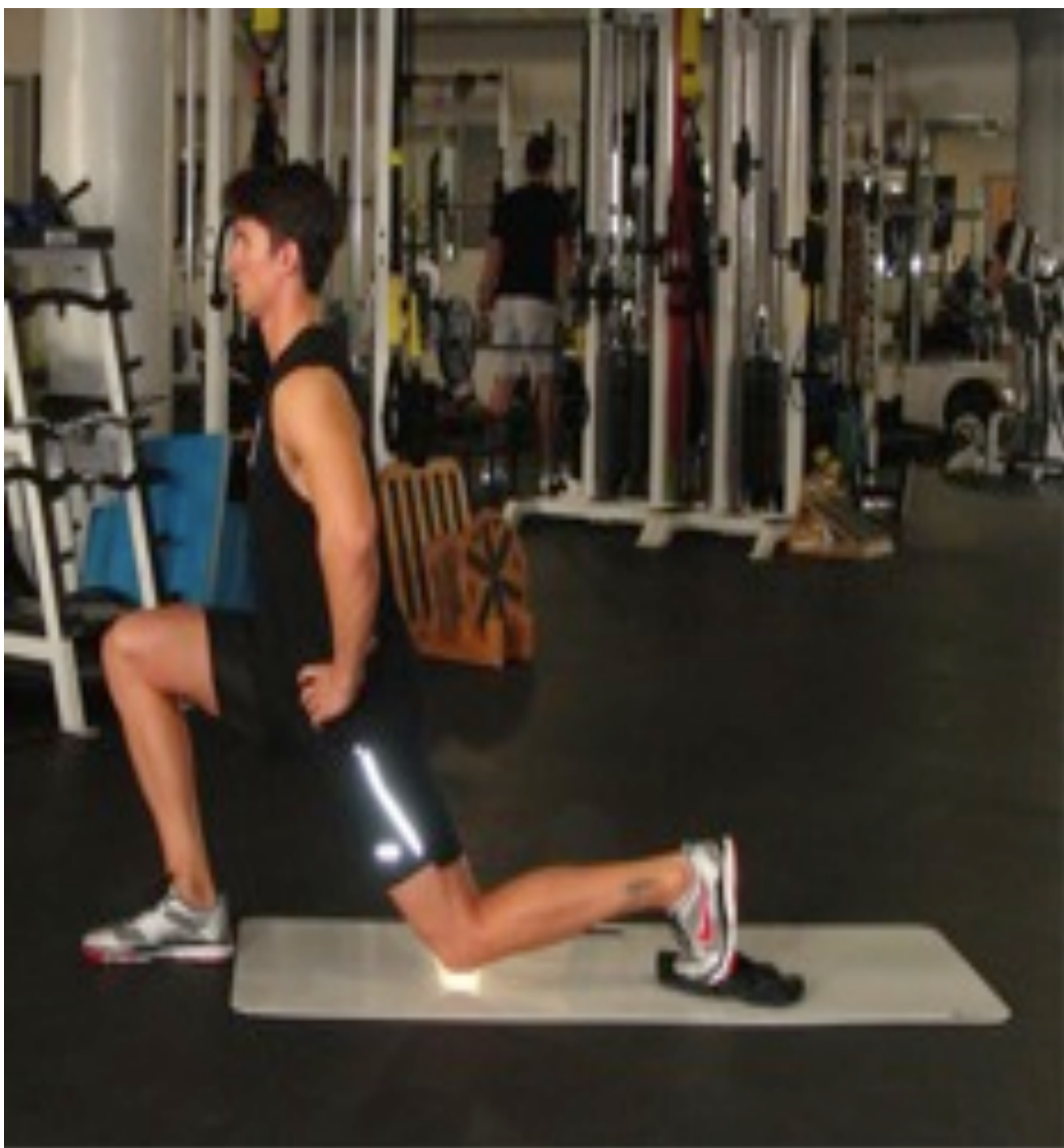
- Can only progress if girth measurements are decreasing and/ or normal and ROM is nearly equal bilaterally with no pain.**
- Sport specific exercises
 - Agility ladder
 - Single plane running
 - Box hops



http://media.betterbraces.com/media/catalog/product/cache/2/image/400x400/9df78eab33525d08d6e5fb8d27136e95/d/donjoy-defiance-iii-custom-knee-brace_5.jpg



<http://www.womenshealthmag.com/files/images/1103-stability-ball-hamstring-curl.jpg>



<http://images.huffingtonpost.com/2012-07-20-reverseslideboard2.jpg>

Case Study

On January 26th of 2014, a female basketball and softball player at Saint Joseph's College tore her ACL during a basketball game. Since she is a multisport athlete, she decided to postpone surgical intervention until after softball season. The athletic trainers at Saint Joseph's College created a conservative treatment protocol out of exercises that are primarily post surgical exercises meant to strengthen the knee. This treatment protocol was broken down into 5 stages based on weeks after the initial tear of the ACL and other symptoms such as swelling, lack of ROM, and pain. Upon completion of the 5 stages of rehabilitation she was then fitted for a DonJoy athletic brace to be cleared to participate in sport in March (6 weeks after the tear). She has since been cleared to play softball on the stipulation that she only be the designated player with no fielding participation and must wear the brace. This rehabilitation program is highlighted in the center table.

Conclusion

In conclusion, conservative treatment for Anterior Cruciate Ligament deficiency can be effective in allowing athletes to finish seasons in very specific roles in certain sports. The patient's knee will still be unstable and will still have moments of the knee "giving out." However, it is highly recommended that patients who suffer an ACL tear should get surgery as soon as possible. This is to prevent instability and further injury of the patient. Surgery also will allow a higher quality of life not only in the foreseeable future, but for the rest of the patient's life.