

## Project #4: Strength and Conditioning for Injury Prevention

### Introduction:

From the information we've covered in this course it should be clear that a well designed strength and conditioning program can build muscular strength, power, or endurance, improve agility and movement skills, and in other ways enhance performance. One thing that is often overlooked, however, is that many times a strength and conditioning program can enhance performance simply by keeping athletes healthy and able to practice. Using strength and conditioning to build core strength, improve muscle balance, improve flexibility can all help keep athletes healthy and training.

Early in this course you were asked to identify the injuries that are most common in your sport and research the mechanisms that contribute to those injuries.

- Is it lack of strength in a specific muscle or muscle group that contributes to the injury? If so, what are those muscles that need to be strengthened?
- Is it lack of flexibility? If so, what joint ranges of motion need to be improved?

This was not an assignment that you were asked to turn in. However, you are going to use that information now. From the injuries identified you will develop a 10 exercise strength and conditioning circuit that you can use with your athletes to hopefully prevent some of these injuries from occurring.

As with the other projects, the idea here is to develop a tool that you can use with the athletes and teams you work with. As such, we want this to be a high quality product that contains good information and is something you would feel comfortable distributing to your teams.

### Project Description:

This project consists of two parts.

#### 1. Identification of the common injuries occurring in your sport.

If you went through the exercise when it was presented in Unit II this should essentially be a cut-and-paste job. Identify the most common injuries in your sport and describe briefly the mechanisms that contribute to these injuries (strength imbalance, lack of strength in a particular muscle group, poor flexibility, lack of endurance, etc). Try to identify injuries that are controllable – things like tendonitis, overuse injuries, ligament tears, things that can be impacted by training. As an example of an injury I would **not** recommend including, let's consider broken bones resulting from impact in a contact sport. Even though this type of injury may be common, there is not much you can do from a preparation standpoint to prevent a bone from breaking. If it's going to happen it's going to happen. (With that said, if you think you can prevent a broken bone through strength training, conditioning, or flexibility training, please feel free to pursue that in this project). However, things like ankle sprains can be impacted by strength training by integrating exercises that improve proprioception and balance in the lower limb. So keep this in mind as you choose the injuries you want to focus on.

**2. Develop a 10-exercise strength and conditioning circuit with a focus on injury prevention. It should be appropriate for the specific demands and challenges faced in your sport and practical, taking into account the resources and training modalities your athletes will have available to them.**

There is a wide range of exercises you can choose to incorporate into your injury prevention strength and conditioning program. However, use the guidelines below to shape the exercises you choose to incorporate into the program you develop.

- The exercises you choose should address the factors you identified in part one of this exercise. If weakness in a particular muscle group is known to be a contributor to a specific injury the program you put together should contain at least one exercise that will build strength in that muscle group.
- Flexibility, or more likely inflexibility, in a specific area, muscle group, or joint can contribute to injury. You are welcome to include static stretches into your program. However, of the 10 exercises you incorporate into your program only include a *maximum* of 4 stretches.
- Movement training can also be a part of injury prevention if you feel that poor movement patterns contribute to the injuries observed in your sport.
- Consider the training options your athletes will have access to when performing these exercises. Will they have access to a strength and conditioning facility and the free weights/ equipment there? Or will they need to do this exercise program at home – where use of resistance bands may be more appropriate? Also since injury prevention exercises also typically need to be performed when the athletes travel, consider whether these exercises can be done ‘on-the-road.’
- Include the following information in the information you provide for each exercise:
  - ✓ Exercise name
  - ✓ Purpose/ rationale for including this exercise
  - ✓ Step-by-step exercise description including recommended sets and reps
  - ✓ Needed equipment/ materials
  - ✓ Not necessary but helpful – pictures of the exercise being performed
- Consider the format you will present this information. You are welcome to choose a format that will work for you, but some things that have worked effectively are:
  - ✓ An exercise manual that athletes and parents can have and use at home
  - ✓ Single sheet exercise cards that can be laminated and laid out on a pool deck, tennis court, basketball court to set up a strength and conditioning circuit (an example of a card like this is provided at the end of this project description and others can be found on-line in the Project #4 Folder)
- Use the resources provided on ANGEL in the Project 4 Folder as well as information from the course text (e.g. the chapters on exercises and technique) to assist in this project. You will find lists of exercises and examples of how this information can be put together.

Good luck and please let me know if there are any questions along the way.

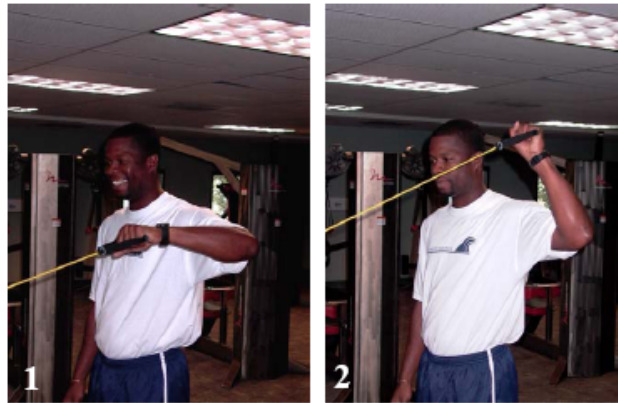
## Example Exercise Description:

### 90-90 External Rotation – Strength Training

**ST-2**

- Purpose**
- Injury prevention in the shoulder
  - Strengthening the rotator cuff

**Exercise Technique**



Step	Action
Preparation	Attach the tubing to a secure location - like a fence or a net post.
	Start by facing straight ahead, holding the tubing with the dominant (serving) hand.
	Lift the arm out to the side until it is parallel to the ground. Bend the arm at the elbow until it forms a 90 degree angle and the palm faces downward.
	Keeping the arm in this position, grasp the tubing and move back far enough to place the tubing at a slight stretch.
Performing the Exercise	Rotate the arm back at the shoulder until the forearm is perpendicular with the ground. The position of the upper arm should not change and the palm should be facing forward at the completion of the exercise.
	Return to the starting position under control of the tubing tension, and repeat.
Duration	Perform 1-3 set of 15-20 repetitions of this exercise.

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