

## Aspects of matching exercise for those who suffer from sport injuries

### Course Objectives

1. Discussion of the importance of the base sciences (anatomy, physiology, neurophysiology, and kinesiology) in determining exercise program for those suffering from sports injuries.
2. Examination of the scientific background of physical training methods (Eccentric training, Proprioceptive training, endurance training) and making them suitable for those who suffer from musculoskeletal injuries.
3. Discussion of typical errors in physical education programs in the context of preventing injuries.
4. Construction of a training program for those suffering from common sports injuries, such as a partial tendon tear, stress fractures, ankle dislocation, herniated disc, and more.

### Subject list covered in course:

1. General: Creating exercise programs, prevention and surveillance programs for musculoskeletal injuries.
2. Identifying risk factors for injuries among athletes in different sports. How to perform screening tests for athletes?
3. Anatomy, Kinesiology and Biomechanics of connective tissue, muscle tissue and bone tissue.
4. Principles and methods for constructing a training program to increase the range of motion for those suffering from sports specific injuries.

5. Stress fractures: etiology and methods of diagnosis. Nutrition as a way to prevent stress fractures? Hydrotherapy for rehabilitation and treatment of stress fractures. The relationship between proper nutrition and stress fractures.
6. Eccentric training and rehabilitation of tendon inflammation - such as Achilles tendonitis. What is the meaning of tendon rupture? Review of the mechanism of inflammation. What are the objectives of eccentric training (general), how eccentric training contributes to the healing process?
7. Matching an exercise program for overuse injuries (such as tendonitis), traumatic injuries (eg, sprained ankle), and nerve damage.
8. Endurance training: purpose of warm-ups and cool down, the effect of aerobic exercise on spine and skeletal axis functioning, aerobic exercise as a treatment of injuries.
9. The knee joint: risk factors for knee injuries. The relationship between range of motion and strength of adjacent joints (hip, ankle) to knee injuries.
10. Strength training: isometric, eccentric, concentric, plyometric, neuromuscular and proprioceptive training principles; choosing the appropriate type of strength training for specific injuries.
11. Close VS. open kinematic chain for rehabilitation from injuries.

#### Method of instruction

The first meeting will be held in the classroom, in addition to the two last meetings to be held in the classroom. All other sessions will be online through the course website. The lessons will be based on the materials submitted by the instructor and discussion of scientific papers (required readings).

- The student is required to access Moodle on a weekly basis.
- Three assignments should be sent via Moodle (following my instructions).
- Poster presentation- please follow my instructions.

Good luck,

Nili