Biomechanical analysis and rehabilitation in athletes

Francesca Pastorelli
Pietro Pasquetti

Department of Physical Rehabilitation,
University Hospital of Florence, Florence, Italy

Address for correspondence:
Francesca Pastorelli, MD
Department of Physical Rehabilitation
University Hospital of Florence
Via Largo Palagi 1
50100 Firenze, Italy
Phone: +39 055 7948414
Fax: +39 055 7948414
E-mail: francesca_pastorelli@yahoo.com

Summary

Posture is defined as the position of the body at a given point in time. Incorrect relationship among different parts of body produces an higher tension on retaining structure that causes postural problems. Posturology is fundamental to recognize the relationship between postural attitude and some pathological conditions otherwise difficult to recognize. In order to study postural attitude, we can use force platform, baropodometric or dynamometric platform to analyze tonic postural system and to evaluate sensitive receptors. The main injuries in athletes are caused by cumulative trauma (overuse injuries) due to functional overweight, leading to conditions such as the runner’s knee, the jumper’s knee, the anterior knee pain, the iliotibial band syndrome, shin split, Achilles tendonitis, stress fractures, groin pull, muscle pull, metatarsalgia, back pain.

Most of all in athletes, postural evaluation is important to correct wrong posture with the aid of therapeutic and proprioceptive exercise; with orthopaedic insoles if occurs, to prevent injuries. After a trauma, rehabilitation is a very important step to return to sport activity in a short time. Rehabilitation process is divided in three phases: an acute phase, a post-acute phase and a “return to play” phase. During the first phase the mean goal is reducing pain and inflammation through rest and the use of medical treatment as criotherapy, laser-therapy, tecar-therapy and FANS. In this phase, according with orthopaedics, physiotherapist can start a safe and effective therapeutic exercise, as isometric training and hydrokineso-therapy.

During the second phase, a particular attention must be paid in recovering the muscular mass and range of motion through stretching and proprioceptive exercises and isotonic training in recovering the muscular mass and range of motion. Therapist can use taping technique in this stage (2, 3).

Time of recover depends on the severity of the injury, on age, comorbidity and patient motivation. Finally the goal of prevention and rehabilitation is to find and remove stress and pathologic agent, to reduce the limitation of the range of motion, control pain and come back to sport.

References