Prepatellar bursitis in canoe paddlers

(overuse syndrome)

In all the joints of the human body, there are particular substances that normalize movements and absorb friction, shock or pressure and also produce lubricating substances. These are bursae, which produce a liquid rich in proteoglycans and other nutrients and, at times with its shape and at other times with the liquid released, normalize the pressures and lubricate the area. Thus in the anterior area of the knee, we observe in front of the kneecap bone one such sac, or bursa, another bursa on top of that, and a third bursa below it. They are called, respectively, prepatellar, suprapatellar, and infrapatellar. The purpose of their existence and functional mission is a) to normalize the loads exerted by the ligaments and tendons to protect them from trauma, b) to lubricate the area through the production of the proper liquid for its smoother and more efficient operation.

These small normalizing sacs, when subject to strong external or internal loads or are overused, react in defense, presenting a series of symptoms, and this condition, which comprises a syndrome, is called bursitis Of course, by definition, the syndrome comprises a functional and/or histochemical disarrangement of many biological elements simultaneously. Thus the appearance is possible of something similar to the knee cap tendon, the knee cap cartilage, the bursae in the area, or elsewhere. The name of the syndrome comes from the element that is most prone. Canoe athletes/rowers (single or double) stand and paddle from a kneeling position in the canoe. It is apparent and known that the anterior surface of the knee lacks a muscle sub-layer. Thus these athletes, in order to paddle strongly and efficiently, place their bended knees inside special casings, called knee pads. These casings are specially designed and of specific dimensions for each athlete.

They need to fit precisely to the knee’s dimensions so as to not allow unnecessary or purposeless movements. But if this is not the case, the risk of injury of the area is immediate, on the one hand, and on the other the athlete will not be efficient in his padding (rowing) activity.

The material of which the knee pads are made should be soft in order not to injure the tissue, and skin-friendly so as not to create dermatological reactions and complications. It is usually made of a spongy material, such as foam rubber, or a combination of carbon-Kevlar. Also, these knee pads must be firmly attached to the sides or hull of the canoe.

Causes of bursitis in paddlers:

- inappropriate or inadequate shape of knee pads (dimensions)
- inappropriate material of knee pads (injury due to hardness)
- inadequately stabilized (attached) knee pads (causing great friction)
- inappropriate or wrong paddling technique
- inappropriate or wrong training planning (overloading)
- inadequate preparatory training of the rower/paddler
- accumulation of articular sub-products
- structural or other (i.e. training) mistake in positioning of the knee pad

Symptoms of the syndrome:

- localized soreness – pain
- swelling
- increased redness and heat in the area
- inability of fully flexing the knee joint

The intensity and variety of the symptoms varies in accordance with the extent of the damage.

Treatment:

Immediate application of ice, which must be repeated 3-4 times during the day, with the method of rubbing on and around the afflicted area.
Discontinuation of rowing/paddling or any other activity that could exacerbate the symptoms of the afflicted area.
Application of physical therapy methods such as T.E.N.S. Laser, ion load with anti- inflammation substances, etc.
If required, a medicinal regime subscribed by a specialized orthopedic (usually injected into the afflicted area).
A regimen of progressive rehabilitation of the injury for functional restoration.
Examination and determination of the exact cause of the injury.

The athlete is ready for full load-training when:

- there is no local soreness (to pressure or touch)
- the joint can be fully flexed
- the athlete can run without problem in all directions and on all ground inclinations.
- the athlete can kneel without appearance of any symptoms.

Prevention of the syndrome

- Execution of exercises for flexibility of the muscles and movements (before and after training).

- Execution of muscle adequacy exercises (i.e. exercises to improve the parameters of strength, speed, muscular tolerance, neuromuscular coordination, flexibility).
- Improvement of balance of muscle pairs.
- Proper planning and quality of materials of the knee pad, support, adequate stabilisation (attachment) to the canoe.
- Proper training planning and frequent laboratory testing of the rower /paddler.