Concentric and eccentric strength of trunk muscles in osteitis pubis soccer players

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Abstract.
BACKGROUND AND OBJECTIVES: Osteitis pubis refers to a painful, inflammatory condition involving the pubic bones, pubic symphysis, and adjacent structures. So, the aims of the study were to evaluate the strength of trunk muscles of soccer players suffering from osteitis pubis, and to compare the agonist/antagonist ratio of trunk muscles in osteitis pubis athletes with that of healthy athletes.

MATERIALS AND METHODS: Twenty-five soccer male athletes with osteitis pubis, and 25 healthy soccer athletes. Peak torque/body weight (PT/BW) was recorded from trunk muscles during isokinetic concentric and eccentric contraction modes at a speed of 120°/s for healthy and osteitis pubis soccer players.

RESULTS: There was a significant decrease in concentric contraction of back muscles in osteitis pubis group (p = 0.01). A significant decrease in eccentric contraction of abdominal muscles was also recorded in osteitis pubis group (p = 0.008). Concentric abdominal/back muscles ratio was significantly higher in osteitis pubis group (p = 0.016), with no significant difference in eccentric abdominal/back muscles ratio between both groups (p > 0.05).

CONCLUSION: Osteitis pubis group displayed concentric weakness of back muscle and eccentric weakness of abdominal muscles that lead to disturbance of the normal concentric abdominal/back ratio.

Keywords: Osteitis pubis, isokinetic, trunk muscles, ratio

1. Introduction

There is frequent occurrence of groin pain in sport activities involving kicking, interval sprinting and rapid change of direction in movement [1,2]. Although the pathogenesis and diagnostic criteria for chronic groin pain in athletes remains unclear [3,4], symptoms are believed to be secondary to stress forces through the anterior pelvis [5,6].

When used in sports medicine context, “osteitis pubis” refers to a painful inflammatory condition involving the pubic bones, pubic symphysis, and adjacent structures [7]. It is an injury that is characterized by chronicity [6], and can run for a prolonged and disabling course if misdiagnosed or mismanaged [8]. The use of “osteitis pubis” as an umbrella term to describe the syndrome of exercise-related groin pain, has been questioned due to the variability in inflammatory findings of athletes [9].

In specific sport such as soccer, the incidence of groin pain has been reported to be as high as 5–13% of athletes’ injuries [10]. Initial presentation of osteitis pubis often includes insidious onset of adductor pain and abdominal discomfort along with pain in the pubic symphysis [11]. Aggravating athletic activities may include sprinting, kicking, twisting and cutting [12]. Common sports that incorporate those activities include soccer, football, ice hockey, running and rugby [11,13]. Physical examination findings include tenderness to palpation of the pubic symphysis, pain with resisted strength testing of the adductor and lower abdominal muscle groups [8].

The muscle balance in a joint is determined by the ratio of torques between agonist and antagonist mus-