Some athletes are immature... skeletally

Michael K Drew1,2,3,4

Older athlete age is a non-modifiable risk factor for groin pain in athletes; however, these studies are usually in adult populations. Underage athletes have been shown to pose approximately double the risk of adults in an Australian Rules football population. Developmental anatomy may be related to this increased risk, but this is still somewhat unknown. Maturation is related to age, gender, race and the environment, with injury rates increasing throughout the adolescent period. This indicates that the imposed environment’s interplay with the developmental changes in puberty should be carefully monitored to reduce the risk of injury. Those who get injured may drop out of sport and never return. For those who continue in sport, injury rates affect the team’s performance negatively and therefore it is in everyone’s interest to work towards a safe and productive training and competition environment.

Sailly et al highlight that athletes should be considered skeletally immature until at least their 21st birthday. Secondary ossification centres of the pelvis, including the pubic apophysis, appear during puberty and fuse between the ages of 15 and 25 years. A highly variable fibrocartilaginous amphiarthrosis creates the symphysis pubis with an aponeurosis and common enthesis created by the rectus abdominis, adductor longus and external oblique and other adductor muscles. These confluent structures are anatomically located close to the pubic apophysis described by Sailly et al and therefore have substantial anatomical connections that transmit forces across the symphysis.

For too long the research focus for groin injuries has been the identification of primary risk factors. The development of pubic apophysal injury is associated with a change in training load parameters as indicated by Sailly et al. Spikes of training and competition load precede injury; therefore secondary prevention programmes need to identify these training risk factors early to allow modification of training loads. Prospective research on the relationship between groin injury and training load is required as the training environment is the primary modality which is modifiable. Many other risk factors, such as increasing age and arguably strength, are unable to be changed in a timely fashion to ameliorate any environmental risks that we impose on athletes.

Rest and conservative management in adolescents including a gradual return to training and competition is required. Recent data has highlighted that lower training load can also expose athletes to risk when returning to normal training. If the absolute change in loads are not monitored it is likely the athlete will suffer a subsequent injury. It appears that training loads and rehabilitation in this clinical cohort should be managed more conservatively than adductor-related groin pain without apophysal injury in skeletally mature athletes. While it appears that increasing age is a risk factor for many athletic injuries, we must be cognisant that under-reporting bias exists in adolescent athletes. Athletes under 21 years of age presenting with adductor-related groin pain should be considered skeletally immature until proven otherwise and management should be specific to the skeletal maturity of the athlete.

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REFERENCES

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