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Observations of a sports apprentice in competitive athletes

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Abstract

Athletes, coaches, sports scientists and staff work together to achieve laurels for their country. However, fierce competition internationally puts enormous pressure on athletes and coaches. Excelling in the Olympics requires training in sports technique, talent, physiology, psychology, biomechanics, nutrition, etc. Bad techniques and practices can affect the desired outcomes. As a sports apprentice, an attempt has been made to discuss some observations which can influence a sports career of an emerging athlete.

Keywords: Mouth breathing, detraining, recovery, sports science, respiratory acidosis

Introduction

The world has been constantly at war through sports since ancient times. In the past, sports practice targeted war preparations or hunter training, which answers why many early sports involved throwing objects like spears and rocks [1]. In modern times, sports have diversified and have become highly competitive. Excelling in the Olympics is every country's priority. This puts enormous pressure on the athletes, coaches, and sports scientists. Bad practices and outcomes arising out of such extreme pressure are discussed.

Mouth breathing

Mouth breathing, i.e. inhaling and exhaling primarily from the mouth, is a widespread abnormal breathing practice in athletes. The involuntary onset of mouth breathing is triggered when there is an excess of carbon dioxide gas in the blood, usually after strenuous training. Such involuntary onset is required to eliminate the excess carbon dioxide from the human system. However, athletes often develop the habit of mouth breathing every time they train, known as mouth breathing syndrome (MBS).

Breathing from the mouth may result in the deprivation of nitric oxide-induced signalling of the cardiovascular system, which earned its Nobel Prize in 1998. Nasal airway epithelial cells can release nitric oxide and trigger a cascade of downstream processes like vaso regulation, capillarization, angiogenesis, hemostasis, neurotransmission, immune defence, etc.

Habitual mouth breathing can cause postural and muscular alterations, eventually dentoskeletal and facial skeletal changes. It also leads to dehydration and can cause infection-inflammation of the tonsils.

Unlike popular belief, mouth breathing reduces O₂ absorption (chronic hypoxemia) and increases CO₂ concentration (hypercapnia), leading to respiratory acidosis because of a change in acid-base balance. This leads to decreased stamina and energy levels vital to an athlete. It is because of inhaling excess oxygen and exhaling too much CO₂, which is needed to transfer O₂ from the hemoglobin molecule during lung respiration [2].

MBS causes dehydration and changes sleep patterns. Also, the nose warms the inhaled air and humidifies it. The nose protects from allergens, toxicants, microbes, dust, etc., because of its coarse hairs (vibrissae) and the secretions it produces.

Athlete-Coach relationship

An athlete-coach relationship is a crucial part of excelling in any sport. High closeness, commitment and complementarity (the 3-Cs) with the coach have been associated with higher and sustained sports performance and vice-versa [3].

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Effective communication and mutual respect between the athlete and coach establish a fruitful relationship. Coaches who display frequent anger, frustration and use punishment; it causes their disciples to fear failure. Once an athlete has perceived that failure brings adverse consequences, they perceive themselves as less competent in their sport, adversely impacting their self-confidence and unleashing a pattern of responses like early burnout, poor recovery and psychological stress that impede goal attainment [4]. Athletes with higher intrinsic motivation said their coaches mostly gave positive and information-based feedback and rarely displayed punishment-oriented and ignoring behaviours [5]. Parents should also give freedom to their wards in choosing or leaving a particular sport.

Detraining

Long vacation breaks or forced breaks like covid lockdowns can hamper fitness levels in an athlete. Cessation of training or detraining causes activity loss in the cardiovascular and neuromuscular systems and, consequently, loss in performance and aerobic capacity [6]. A study reported decreased vagal-related heart rate variability parameters after a five-week break [7]. Coaches should refrain from granting leaves for at least three weeks, and an athlete should be sincere enough to do some home-based exercises to stall detraining effects on the body.

Other issues

Apart from the aspects mentioned above, self-motivation and determination play a dominant role in achieving the desired sports success. Players often get demotivated when they don't get wanted medals. Players need to learn from their failures and work forward on their weaknesses. They have to remain self-motivated and highly resilient. Mind-body interventions like yoga can increase resilience [8] and should be incorporated into their training.

The reluctance of coaches to accept sports science and sports scientist hesitancy in understanding the game creates confusion and a lack of mutual trust and respect. With the help of sports science, it is well known that coaches can customize players' diets, training load, and prevent injuries, eventually leading to better training and recovery. Similarly, if sports scientists appreciate the need and basics of sports, they will better report recommendations and applications.

Athletes often undermine the importance of active recovery after training sessions. They habitually left muscle recovery solely passive, increasing their sleep time to ten hours. This results in lactate accumulation in their muscles which can lead to injuries. It is advised that stretching, walking, yoga, swimming, and training session load at half capacity are some active recovery strategies.

Lifestyle management is also necessary because sincerity only inside the stadium lead to limited success. Athletes should remain athletic and sincere outside the arena, also. A gymnast slouching while sitting at leisure may compromise muscle adaptability and conditioning gained during training. Athletes often over-report and sometimes under-report their injuries to their coach or medical staff. They over-report when they want a break from training which would not be approved. They underreport injuries to please their coach or to excel in self-determined high-level training just before a competition. In both cases, it is detrimental to the athlete.

There should be continuous education programmes for athletes and coaches regarding physiology, psychology, introductory anatomy, biomechanics and their significance to

make them aware and understand the sports science for better performance and recovery. Athletes and coaches should regularly interact with sports scientific staff, ask questions and make recommendations without hesitation. For example, biomechanics can pinpoint problems in the running motion of an athlete and provide advice to improve speed and agility. Coaches and athletes often undermine the value of biomechanics in their sport-specific discipline.

A monotonous training schedule and a lack of role models or inspiration can leave athletes and coaches the vigour and vitality necessary to improve. There should be changes in training routine and exercises. Athletes should be encouraged to try outdoor games and be shown videos of champions' performance during competitions.

At last, true sportsmanship can be derived from the words of the founder of the modern Olympic games "The most important thing in the Olympic Games is not to win but to take part, just as the most important thing in life is not the triumph but the struggle. The essential thing is not to have conquered but to have fought well."

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