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The Importance of Confidence in Sprint Performance: An Analysis

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ABSTRACT: Stadion (or stade), was an ancient running event that was part of the Olympic Games and other Panhellenic Games. From 776 to 724 BC, the stadion was the only event at the Olympic Games; the victor gave his name to the entire four-year Olympiad. The winner of the stadion at the first Olympic Games was Coroebus of Elis. The stadion, named for the facility in which it took place, was simple: run the length of the arena, which was approximately 200 yards (180 meters). Since then, sprinting has evolved and grown immensely since the first barefoot and naked competitors ran the stadion on that exposed ground.

Ropes were used to separate sprinting lanes. Sprinters first started races standing straight up before utilizing the crouched position. Synthetic tracks came into use in 1956. Starting blocks only arrived in 1984. Tracks have improved, apparel and shoes have gotten lighter and more streamlined, and as a result of these improvements coupled with new training techniques, sprinters have gotten faster. Thomas Burke (USA) won the first-ever 100-meter dash in 12.0 seconds at the 1896 Games in Athens. The times would only lessen from there. Archie Hahn (USA) won gold in the event in 1904 with a time of 11.0 seconds and repeated the feat in 1906 in 11.2 seconds. Jesse Owens (USA) raced to the gold at 10.3 seconds in 1936 in Berlin

I. INTRODUCTION

Starting the Race

In the ancient Olympics, the Greeks had a sprint of about 190 metres called the *stadion*, which involved a sprint down a straight track and back again. The technology of the day consisted of nothing more than a wooden post at one end to help the runner on his return. Races began with the athletes standing upright, with their toes resting in grooves in a starting stone. Later a starting gate (called the *husplex*) was used, much like that in horse racing today.

In the modern Olympics, sprinters start from a crouching position, pushing against starting blocks to help them accelerate. Blocks were introduced in the late 1920s and were first used at the 1948 London Olympics. Instrumented starting blocks appeared in the early 1980s. A device within each starting block records the interval between the gun firing and the first athlete leaving the blocks. A false start is declared if this interval is less than 0.110 of a second, since this figure has been determined as the limit of human reaction time.

Judging the Finish

Timing the finish of events has similarly evolved over time. Originally the race winner was determined by a judge or judges who determined the result visually. This has evolved into the extremely complex systems in use in today's modern Olympics.

Judging very close running races visually was a problem until photo finish cameras were used. Originally, film-based cameras were used, but this meant that athletes and spectators had to wait until the film was developed before they knew the result. The introduction of the vertical line-scanning video system in 1991 removed human error from the judging of running events. The video image of each athlete as they actually cross the line is shown superimposed with a grid that records the time for each competitor. This system allows judges to declare the result more quickly and more accurately.

The timing of performance initially used hand-held stopwatches, which in turn depend on human judgment and reactions for their accuracy. The stopwatches themselves also have an inherent inaccuracy of the order of 0.2 of a second, which would correlate to an error of 2 metres in a 100 metre sprint.



Such inaccuracy presents real difficulties. In the 1960 Rome Olympics, Australia's John Devitt and America's Lance Larson finished virtually simultaneously in the 100 metres freestyle final. Two of the three first-place judges had Devitt as the winner whereas two of the three second place judges had him in second place. All three timekeepers using stopwatches gave Devitt 55.2 seconds, while the timekeepers on Larson's lane gave him 55.0, 55.1, and 55.1 seconds. Because all six measurements were within 0.2 of a second of each they did little to help decide the winner. On the basis of the decisions by the first place judges, the gold medal was awarded to Devitt and the official time for both was recorded as 55.2 seconds.

In 1964 an electronic quartz timing system was used for the first time in international events, thereby improving timing accuracy to 0.01 of a second. The computerised timing used in events today has increased the accuracy to 0.001 of a second, which is 10 times the accuracy required under current rules.

With such astounding accuracy, unsuspected problems may become apparent. For example, the timing device has to be stable to about 100 parts per million per degree Kelvin to stop it losing accuracy as the ambient temperature fluctuates. Fortunately such accuracies are becoming easier to solve due to improvements in microchip technology

What is confidence in Athletics? Its Importance

Confidence can be linked to a variety of terms that are all interlinked and are often used interchangeably.

- Self-confidence – The belief that one has the internal resources, particularly abilities, to achieve success.
- Sport Confidence – Used to describe a sport-specific confidence, which is an athlete's belief that he or she has the ability to perform successfully in sport (Vealey, 1986)
- Perceived competence – Focuses on the skills individuals perceive they possess. Self-confidence focuses on people's beliefs about what they can do with the skills that they have (e.g. perform successfully)

The importance of Confidence for Young Athletes

- Self-efficacy theory states that self-confidence influences how people behave, think and emotionally respond in various situations (Bandura, 1997). Behaviourally, levels of confidence or self-efficacy influence young athlete's motivation in terms of the choices they make, the effort they expend, the persistence they show in the face of difficulty, and the resilience they demonstrate in rebounding from failure. Chase (2001) found that 13-14-year-old athletes high in self-efficacy had stronger motivation to participate in sport in the future compared to low self-efficacy children. Perceived physical competence has been linked to positive emotions in youth sport such as feeling pride, satisfaction and enjoyment (Ebbeck and Weiss, 1998).

How can we build confidence in Young Athletes?

Vealey, Chase and Cooley (2018) outlined case studies related to confidence in various domains. These cases provide suggestions that can help us understand young athlete's confidence within various age groups.

- *Importance of fundamental motor skills and physical literacy for confidence* – If we go right back to the early stages of a young athlete's development, then fundamental motor skills and physical literacy are the main areas of focus. An important goal for all children in these early stages is the attainment of physical literacy, which is the physical competence and confidence to maintain physical activity at an individually appropriate level throughout life.
- *Developmental changes in perceived competence* – The age and developmental stage of a young athlete will affect the way that they view their competence. Children become more accurate in assessing their personal competence as they age. Additionally they will use different sources of information upon which to base their confidence as they age.
- *Maturational influences on confidence and importance of mastery orientation* – The rate that an individual matures will impact upon their confidence and the role of mastery orientation. For example, because of their early success, early maturing boys receive a lot of recognition and attention from coaches, which fuels their confidence and motivation in sport but as others catch them up this confidence could be knocked.
- *Learned helplessness* – Learned helplessness happens when people become conditioned to believe that a situation is unchangeable or inescapable. Attributions affect confidence and motivation because they are the reasons young people identify as to why they succeed or fail. Learned helplessness can hamper confidence and motivation to get better because an individual does not believe they can improve.
- *Coach expectancy and feedback* – It is important to remember the huge influence that coaches can have on the confidence of young athletes as they progress through their respective sporting environments. Coaches can



influence youth athlete's confidence through various aspects of the coach-athlete relationship including modelling and leadership, trust, encouragement and performance feedback.

- *Importance of developing and reinforcing a growth mindset in young athletes* – The Growth mindset will be key for young athletes. Although confidence is based on beliefs about abilities, an athlete can believe his ability is either (a) fixed and unchanging (fixed mindset) or (b) something that can continually be improved and developed (growth mindset).
- *Performance slump and loss of confidence* – The most important source of confidence for young athletes is their performance. So it is not surprising that when athlete's performance decreases, their confidence subsequently suffers, this can be a vicious circle for many if not addressed early enough.

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