
The Color Of The Plasticine Indicator Board In The Horizontal Jumps

The author believes that plasticine indicator boards (the boards upon which the plasticine is applied) should be a different color from the white takeoff board. While the white color of the takeoff board is mandated by the rules, there is no such requirement for the plasticine indicator board. The idea is that if both boards are white, it is more difficult for the horizontal jumper to correctly target the takeoff board, and this seems to be borne out by the higher number of fouls committed in meets where the boards are both white.

I was in Athens watching the Olympic Games and was struck by what appeared to be a high number of takeoff fouls in the long jump and triple jump competitions. A subsequent examination of results from recent international championships

revealed that all takeoff boards are not created equal. The color of the plasticine indicator board apparently has a substantial influence on the likelihood that an athlete will overstep the board at takeoff.

The large number of fouls in

Athens was probably due to the use of a white indicator board that reduced the athlete's ability to successfully target the takeoff board. A comparison of recent international championships suggest that a white indicator board produces the most fouls, whereas an indicator board that is the same color as the runway produces the least number of fouls (see Table 1).

SUBCONSCIOUS TARGETING OF THE TAKEOFF BOARD

The purpose of the plasticine indicator board is to assist the

| Competition | Fouls | Plasticine Indicator Board |
|-----------------------------------|-------|-----------------------------------|
| Athens 2004 Olympic Games | 33% | White with 1 cm red plasticine |
| Paris 2003 World Championships | 23% | Red with 1 cm green plasticine |
| Edmonton 2001 World Championships | 24% | Yellow with 5 cm green plasticine |
| Sydney 2000 Olympic Games | 36% | White with 5 cm red plasticine |

Table 1. Comparison of the number of fouls at recent international championships. Results are for all the men's and women's long jump and triple jump competitions, including the qualifying rounds and multi-event competitions. The plasticine indicator board is placed after the takeoff board and is 10 cm wide.

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judges in determining if the athlete's takeoff foot has touched the ground beyond the takeoff line. In competitions conducted under IAAF rules the takeoff board is 20 cm wide and the plasticine indicator board is 10 cm wide. The plasticine indicator board is raised slightly (7 mm) above the level of the takeoff board, with a leading edge that is bevelled at 45° and covered with a thin layer of plasticine. The color of the takeoff board is specified (white), but the color of the plasticine and the plasticine indicator board are not.

The color of the plasticine indicator board apparently affects an athlete's ability to target the takeoff board properly. Most coaches advise against looking directly at the takeoff board during the last few strides before takeoff. Instead, the athlete directs his gaze beyond the pit.

The rationale behind this advice is that it is best for the athlete to use a pre-programmed stride pattern during the run-up, and that the athlete should avoid making adjustments to his stride length to correct for run-up errors as this will reduce his run-up speed. If the athlete always uses a pre-programmed stride pattern during the run-up, any errors in the position of the foot at takeoff can be corrected by adjusting the starting position of the run-up.

However, research on long jumpers and triple jumpers has shown that even highly experienced athletes make correcting adjustments to their stride pattern in the last few strides before takeoff (Hay, 1988a; Hay 1988b; Lee, Lishman and Thomson, 1982). An athlete who does not look directly at the takeoff board still has the takeoff board in his peripheral vision, and so will make subconscious adjust-



Having a different color for the plasticine board (as in this picture) can reduce fouling. Here Jonathan Edwards jumps in a 1994 meet at Gateshead.

ments to his stride length to bring his takeoff foot closer to the board at takeoff.

This interesting aspect of jumping technique was revealed by sport scientists who measured the positions of every stride in an athlete's run-up over the six trials of a competition. Most athletes train to produce a consistent stride pattern, but there will always be some random variation in the placement of the foot from one trial to the next.

As the athlete moves down the runway, these errors in the movement pattern accumulate, and so the variation in the position of the foot at each stride increases. For illustration, at the fifth stride from the start of the run-up the placement of an athlete's foot may vary by 20 cm among the six trials, but by the

tenth stride the accumulation of error will have increased the variation in foot placement to 30 cm.

Sport scientists have found that the variation in foot placement does not increase continuously all the way to the takeoff board. About 3-7 strides before takeoff the amount of variation starts to steadily decrease, indicating that the athlete has begun visually guiding himself onto the takeoff board. For most athletes the process of targeting and stride correction is subconscious.

EFFECT OF COLOR ON THE LIKELIHOOD OF A FOUL

The color of the plasticine indicator board apparently has a

substantial influence on the ability of an athlete to successfully target the takeoff board. Many athletes perform their training jumps without a plasticine indicator board. Instead, a blanking plate is inserted behind the takeoff board to replace the plasticine indicator board. This blanking plate is usually covered with a strip of material identical to that used in the runway. In these circumstances the athlete is effectively training to hit a 20-cm-wide white target, with a successful takeoff being one in which the takeoff foot does not extend beyond the front edge of the target.

Problems may arise in a competition if the target presented to the athlete appears different to the one experienced in training. The worst scenario for the athlete is a white plasticine indicator board. Here, the athlete is presented with a white target, but now a successful

takeoff is one in which the takeoff foot is 10 cm from the front edge of the target.

An athlete jumping under these circumstances may therefore be expected to produce a high number of takeoff fouls. The best scenario for the athlete is a plasticine indicator board that is the same color as runway, so that the target appears similar to that experienced during training.

RECOMMENDATIONS

To produce consistency in the number of takeoff fouls among competitions, the IAAF should standardize the color of the plasticine indicator board and the plasticine. The best arrangement, which would minimize the number of takeoff fouls, would be to specify that the plasticine indicator board

and plasticine must be the same color as the runway.

It may take some time for this recommendation to be approved and implemented. Meanwhile, coaches should ensure that their athletes train using a blanking plate that is the same color as the plasticine indicator board that will be used in competition (if known). Also, competition managers can exercise their current freedom to choose, and decide to use plasticine indicator boards and plasticine that are the same color as the runway.

REFERENCES

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MY LOVE AFFAIR WITH LACTATE

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system. Being able to increase an athlete's maximal lactate value through training would help performance in those events that rely on anaerobic glycolysis and therefore result in high lactate values, such as 400 and 800 meters. Being able to produce lots of lactate is a *good* thing.

Lactic acid is also used in the clinical setting, where a high resting lactic acid value may indicate liver disease or hypoxemia (deficient oxygenation of the blood). Since the liver uses lactic acid to make glucose, a high lactic acid value may indicate liver dysfunction. Alternatively, a high lactic acid value may indicate hypoxemia since, in the

absence of oxygen, pyruvic acid will be converted to lactic acid.

Although my intellectual love affair with lactate over the years has sometimes been put on hold to study other things, our physical

love affair has always remained, reuniting with her every time I go to the track. Perhaps, someday, she won't be misunderstood, and she can be admired for what she truly is.

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