



STARTERS

A Manual for Experienced and Novice Starters

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This monograph on Starters is written by Dr. Eric D. Zemper, drawing on the previous writings and expertise of Dr. Kelly Rankin, Dr. Charles Dailey, Fred Adler, Tom McTaggart, Joseph Caruso, Bill Buttermore, and Tom Todd with additional helpful comments from Alan Bell, Dennis Beerling, Raymond Pierre, Lloyd McMillan, John Deardorff and Ian Gordon. Much of the material contained herein has been utilized in training clinics for starters developed and presented in the USA for several years by Drs. Dailey, Rankin and Zemper. These clinics, in turn, were based largely on a book written by Drs. Dailey and Rankin, *Track Starter's Guide*, published in 1990 by the American Alliance for Health, Physical Education, Recreation and Dance, 1900 Association Drive, Reston, VA 22091. (Elements of that book are used as the basis for parts of this monograph with the authors' permission.) My thanks to all of the above named individuals for their help, direct or indirect, in writing this monograph.

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(NOTE: Throughout this document, where either masculine or feminine gender is used in referring to officials or to athletes, both masculine and feminine gender is implied.)

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Starters Monograph

Introduction

Every year around the world there are millions of athletes participating in tens of thousands of athletics competitions started by many thousands of different starters. Every starter brings a unique background and set of experiences to this task. Despite working under a specific set of rules governing the starting of races, there often can be wide variability in the way races are started from one starter to another and from one country to another, one region of a country to another, or even within a small geographic area. While variety may be the spice of life, too much variety in the way starters handle a start can be very disconcerting for the athlete on the start line. The start of any race should be a time when athletes can focus on their performance and not have to worry about just how this particular starter operates. At the start of a race, all actions and activities of a good starter will be conducive to a calm atmosphere that allows the athletes to focus their full attention on their start and on their race.

This monograph is intended to present some suggestions for providing a consistent approach to handling duties at the start line for all starters, whether they have years of experience or are just beginning as a starter. In some cases, alternatives for specific techniques and mechanics of starting are presented, with the hope that a starter will feel free to try these different techniques to see what feels most comfortable. But the overall goal is to give everyone who reads this monograph a common background and approach to the duties of a starter in the hope that it will reduce much of the confusion and distraction athletes may feel when they work with a new starter for the first time.

As a companion piece to this monograph, it is recommended that a copy of *The Starters Case Book*, compiled by Raymond Pierre, be obtained from the USA Track & Field officials training website (<http://www.usatf.org/groups/officials/files/resources/track-events/starters-casebook.pdf>) and read for further background on handling difficult situations faced by starters. In this Case Book, a panel of nine international-level starters from the USA, Canada and Great Britain in 2007 gave their responses to a variety of difficult circumstances a starter might face.

Characteristics of a Good Starter

The primary goal of any competent starter must be to ensure all runners receive a fair and equal start for each race. The Golden Rule for starters (and for all athletics officials) should be: *No athlete is allowed to gain an unfair advantage, and no athlete should have to suffer an unfair disadvantage.* The atmosphere at the start of a race can be one of ease and calm or one of confusion, based on the approach and the actions of the starter at the start line. A competent starter is able to take command and remain calm throughout the starting process. This begins with the ability to give clear, precise instructions and the ability to give the starting commands in a strong but calm voice. This in turn will help relax the competitors and make them feel confident in the starter. If the athletes feel confident that the starter will provide a clean, fair start for everyone, without any quirks or distractions, that is one less thing they have to worry about, which allows them to focus more attention on their race. A good self-evaluation check for the starter (and any other official) is that if you leave the competition unnoticed, your job has been well-done. The attention should always be on the athletes. Officials are there only for the purpose of ensuring the competition is conducted according to the rules, not to “grandstand” or draw attention away from the competitors.

Other characteristics of a good starter that often are mentioned include being physically fit, mentally alert, having good eyesight and reactions, the ability to concentrate and maintain complete focus, an enjoyment of working with youth, and a love of the sport. Common sense and tact also are required. Because the starter is in complete control of the start of a race, and (with certain exceptions to be discussed later) the starter's decisions cannot be appealed, he must have a complete and thorough knowledge of the rules regarding the starting of races, and an understanding of competition requirements and the needs of the athlete. Since things can happen so quickly at the start line, the starter must be decisive, but not brusque. A good starter must have a great deal of patience, and must be able to project an air of calmness at the start line. It is not enough to be calm yourself; you must be able to project that sense of calmness to the athletes. On occasion a good sense of humor also is necessary. A competent starter should be relaxed and never try to overwhelm the athletes with his or her presence.

A competent starter also practices preventive officiating. If a starter sees a situation developing that could result in a problem, he should do something to correct the situation immediately, before it does become a problem. As should be the case with any other official, the competent starter always gives the athlete the benefit of the doubt. And no matter what the level of competition, whether a youth meet or a national championship, the starter should be able to project the feeling that these athletes are important and that this is the most important race ever started. Sam Bell, former track and field coach at Indiana University in the USA, has described a good starter as "one who is friendly, and creates confidence and relaxation in the athletes. He must have complete knowledge of the rules and maintain control, yet never lose compassion for the athletes."

Pre-Meet Activities

Leaving aside prior details like confirming the date and time of the meet with the meet director or host coach, the first thing a starter should do on the day of a meet is to check the equipment bag. Make sure all the equipment needed for that day and the anticipated weather conditions is available (see "Starter's Equipment - What's in the bag?" in Appendix A). The members of the start crew should arrive at the track at least an hour before the start of the first event, and the head starter should report to the referee and/or the meet director. At this time it is advisable to check with the referee or meet director to see if there are any last minute changes in the event schedule, any last minute briefing meetings or any special circumstances the starter needs to be aware of. Also, meet with the chief clerk (chief call room official) and chief starter's assistant to confirm the process for bringing athletes to the start line and to review the instructions the athletes will be given by the clerks and/or the starter's assistants.

Next, the starter and recall starters should get together for a pre-meet conference. If this is a competition where evaluations of the crew members are being done by the head starter or start coordinator, this process should be noted and discussed, so everyone understands the criteria to be evaluated and the procedures to be used. If any members of the crew have not worked together before, this is the time for the starter to briefly review the positions of each recall starter for each type of race, and the communication signals between starter and recall starters (see later sections on these topics). The chief or head starter should review who is assigned to start each race. If there is a complete novice on the crew, this individual might need to spend a couple of meets being exclusively a recall starter, observing and getting a "feel" for how everything works. Otherwise, it is recommended that the head starter assign the responsibility of starting a few races in each meet to each of the recall starters on the crew. This can begin with starting distance races for novice starters, gradually taking on responsibility for starting races using starting blocks once they gain more experience and confidence. The starter

should act as a mentor to those on the crew who are new to starting, offering constructive advice and praising good technique and mechanics.

If there is no published duty sheet for each start crew member, it is helpful for the starter to give each member of the crew a small card with the event schedule printed on it, so each can make notes on assignments and have a handy reference during the meet for the event order and time schedule. If there is someone responsible for moving the starting blocks, that individual also should have a schedule card. And it is always appropriate to remind the crew of the importance of working in cooperation with the clerks and the starter's assistants to keep to the time schedule for the competition. If you have arrived at least an hour before the first running event, the start crew should have time for an unhurried review of the track facility. This includes checking for the correct location of all start lines and the finish line (especially if you have not worked at this particular track before), location of cables (if fully automatic timing [FAT] with a hardwired cable to the timing system is being used) and any other electronic equipment such as a sound system. If the track does not have a 3 meter "walk up line" for the start lines of the distance races, it is a good idea to carry a piece of white or yellow sidewalk chalk with you in a plastic baggie to make your own 3 meter marks on the track.

Then the starter should meet with the finish line crew. If you have not worked with this set of finish line officials, it is a good idea to review the procedures you will use, and any whistle signals or arm signals you will use, so they know what to expect. (See the later section on communication between the start line and finish line.) When FAT is being used, check with the camera crew to confirm how they will let you know when they are ready for the next race, and how you will alert them that you are ready to start the next race. This also is the time to perform a test of the gun sensor, whether using a cable or a radio link, to ensure the entire system is operating correctly.

Finally, if there is an announcer for the meet, check with this individual to work out the logistics of when to start announcing race participants' names, so these announcements do not delay the start of the race. Usually this announcement should begin about two minutes before the scheduled start of the race, or right after you have given the order to remove the warm-up gear. And make sure the announcer understands that, once you have called the runners to their marks, an announcement should not begin until after the race has started (unless it is a call for quiet for the start). Communication between the starter crew, the finish line, clerks, starter's assistants and the announcer, and an understanding of the need to avoid delays, are vital to keeping a meet running on time.

Starter's assistants

Even in small local meets, there should be at least one starter's assistant available. These individuals (formerly called "marksmen" in some countries) normally are responsible for assuming control of the athletes when they are brought to the start area by the clerks, doing last minute checks of bib numbers and uniforms, and ensuring each athlete is on the proper start line and in the proper lane or start position. In smaller meets the starter's assistant(s) may also act as the check-in clerk. In races using starting blocks, the recall starters and starter's assistants should be prepared to assist athletes having problems setting their blocks. When all is ready, the chief starter's assistant lets the starter know that the athletes are ready to begin the race, and then assumes the assigned position to observe the start, checking for toes or fingers over the line. While they do not have starter pistols to recall a race, the starter's assistant can signal the starter to stand the athletes up if they see a problem, and they are additional pairs of eyes the starter can consult if necessary in the case of a false start. A brief review of

the duties of Starter's Assistants, from the South of England Athletics Officials' Association, can be found at <http://www.seaoa.co.uk/duties/starter-marksman.html> (page 6 and 15-16).

Instructions to Competitors

Most of the instructions containing the following information regarding the race should have been provided to the athletes by the clerks in the call room or by the starter's assistants, but the starter may want to give some brief instructions before the start of each race to ensure that your procedures and expectations are clear to every runner. These explanations should be given about 2-3 minutes prior to the start, and be kept brief so as not to unduly distract the runners as they prepare for their race. The length of your comments will vary with the experience level of the competitors. With youth competitors and high school competitors early in the season, you will want to be thorough and give instructions up to and including the finals. At the university level somewhat briefer instructions are appropriate for the preliminary rounds, but the runners may need only a brief reminder for the finals. For elite athletes, generally no instructions are necessary from the starter, at most a brief reminder to hold steady and wait for the gun.

An example of a more thorough set of instructions appropriate for sprint races (400M or less) for youth or early season high school or university runners is as follows:

“There will be two verbal commands and then the gun to start the race. Please stand behind your blocks and, when I give the command “On your marks”, come forward and get settled into your blocks without any delays. When everyone is settled, I will give the “Set” command. Come up to a full, complete set position without any hesitations or slow roll-ups, and then hold steady and wait for the gun. I will not surprise you with a quick gun; I will hold you until I am satisfied everyone is still and in control. React to the gun; do not try to anticipate it to the point that you disqualify yourself. Are there any questions?”

In cases where there are multiple heats of a straightaway race, rather than giving instructions to each heat separately, it saves a lot of time to gather the runners from all the heats together and give instructions to all of them at once before the first heat.

An example of the starter's instructions for longer race (more than 400M) is as follows:

“There will be one verbal command and then the gun at the start. We will use the “International” start or walk-up start. Please line up about 3 meters behind the start line and, on the command “On your marks”, come forward quickly to the start line, checking to make sure your toes are not on or over the line. When everyone is still and in control, I will fire the gun. You will receive lap times here on every lap. Are there any questions?”

In each case you have reminded the runners of what the command cycle will be, and what your expectations are after each of the commands. And you have assured them that you will give everyone the opportunity to be focused and thoroughly prepared for the starting signal. If desired, the information in the above instructions can be given by the clerks or starter's assistant, rather than the starter.

Be aware of when starting blocks are required and when they are optional. Generally, blocks are required in any races of 400 M or less. IAAF rules now stipulate that in all races beyond 400M it is

required that runners use a standing start; i.e., no crouch starts without blocks and no leaning over with hands or fingers touching the ground in front of or behind the start line. In Masters competition use of starting blocks and a crouch start is optional. Because of these differences in the rules regarding the use of starting blocks for Masters runners, there will be occasions where individual runners in the shorter races will not use starting blocks and may use a standing start. In such cases the starter should identify these athletes and give them additional instructions following the instructions to those using blocks. These competitors should be informed that after the “On your marks” command they should place their toes behind the start line and stand relaxed until the “Set” command, since it will take some time for those using blocks to get settled into their blocks. Upon the set command they should assume their final starting position and hold steady until the gun is fired. Sometimes a runner in this situation will begin to move or fall forward before the gun, often because they lose their balance as a result of their feet being too close together. The starter or recall starter should call the competitors up, suggest to the runner having the problem that a wider stance might solve the problem, and start the command cycle again.

For wheelchair races, the starting instructions are basically the same as for any other athletes, three commands for the sprint races and two commands for the distance races. The modification in instructions for the wheelchair racers is that they must have the axle of the front wheel of their chairs behind the start line. For race walks, the starting instructions are basically the same as for the distance races.

Position of Starter and Recall Starters

When the pre-race instructions are completed and the starter’s assistants have properly placed the athletes, the starter crew should be in their positions for the start of the race. The exact positions can vary considerably, depending on whether you are working alone or with one or more recall starters, and on the physical layout of the starting area.

There are two primary factors to keep in mind when deciding where to place the starter and any recall starters:

- The starter should, in most cases, be in a position where the entire field of runners can be seen in as narrow a field of vision as reasonably possible (i.e., “full visual control” as noted in Rule 129.3). This is an absolute must if the starter is working alone; in races with long staggered or echelon starts (e.g., 4x400, 4x200) it may be impossible to see all eight lanes and there will have to be at least one recall starter to cover part of the field.
- The starter ideally should be positioned so the sound of the gun travels roughly an equal distance to the runners in the inside and outside lanes. This factor normally is secondary to the visual factor, but it does become more critical in races with long staggers.

With regard to the first factor, the starter’s field of vision, keep in mind that while we may have a fairly wide field of view with peripheral vision (about 160°), the area where we have good visual detail sufficient for making officiating decisions is limited to about 30° in the center of our field of vision. That 30° can be estimated by placing your hands an arm’s length in front of you with fingers spread and thumbs overlapping. The area between your little fingers approximately defines your 30° field of central vision where you can see and identify small movements with certainty. This limitation in the field of vision must be taken into account when deciding where to place the starter and recall starters. In addition, it generally is best to have a side or oblique view of the field of runners, to most easily detect any early forward movement indicating a false start, but this may not always be possible.

With regard to the second factor, distance the sound of the gun travels, keep in mind that sound travels an average of approximately 343 meters/second (1,125 feet/second), which potentially can mean a difference of 0.2 seconds between when runners in the inner and outer lanes hear the gun in a race with long staggers, depending on where the starter stands. Differences like this might not be too critical in situations where hand timing is being used, since the average error in hand timing is around 0.2 seconds, but when FAT is being used it can become quite critical when tenths and hundredths of a second decide places or who goes to the next round of competition. So this factor should be taken into account when deciding on placement of the starter and recall starters, particularly when FAT is being used.

Theoretically, the sound of the gun traveling an equal distance to all athletes may not be so critical when a sound system is used with speakers near each runner, either alongside the track or mounted on each individual starting block, as is the case with some electronic blocks, the assumption being that all athletes will hear the sound of the starter's gun at the same time through the speakers. However, there is research reported in the IAAF research journal indicating that such sound systems are not as useful in this regard as originally thought [see, for example, A.L. Julin and J. Dapena "Sprinters at the 1996 Olympic Games in Atlanta did not hear the starter's gun through the loudspeakers on the starting blocks" *New Studies in Athletics* 18(1):23-27 (2003)].

Taking these factors into account, the following are *general suggestions* for placement of the starter and recall starters in different situations. (In the diagrams accompanying the following text, the lines radiating from the starter/recall positions are an approximate indication of the 30° center of field of vision noted previously.)

Sprint races - straightaway. For the short sprint and hurdle races on a straightaway, there are two usual positions for the starter. To provide a good side view of all runners, the starter may stand about 3-4 meters in front of the start line and about 10-20 meters back from the inside edge of the track, preferably on an elevated stand (the position favored by Canadian and many European starters). This allows more of a side view of all competitors to be able to readily detect any forward movement prior to the gun, yet allows enough of an angle to be reasonably able to detect slow roll-ups (Figure 1). Alternatively, the starter may stand about 10-12 meters in front of the start line, near the edge of the track, or back a few meters from the edge of the track if there is sufficient room (the position most often used in the USA). This is far enough away to provide good visual contact with every lane, but close enough that the verbal commands can be heard by all the runners without having to shout, and it provides a more equidistant position with regard to sound of the pistol to lanes 1 and 8 (Figure 2).

Whether the starter stands on the inside or the outside of the track may be personal preference, or it may be dictated by the physical facility (e.g., a fence right next to the edge of the track on one side). If FAT with cables rather than a radio link for the gun sensor is being used, the location of the sensor cable may dictate on which side of the track the starter will stand. If possible, it is best to stand on the opposite side of the track from the timers at the finish line, since this makes the starter more easily visible to the timers.

If there are recall starters available, they should take the following positions. If there is one recall starter, this person should stand near the edge of the track about 8-10 meters in front of the start line if the starter is in the position more in line with the start line (Figure 1); or on the opposite side of the track from the starter, about 1-3 meters in front of the start line and 3-5 meters from the edge of the

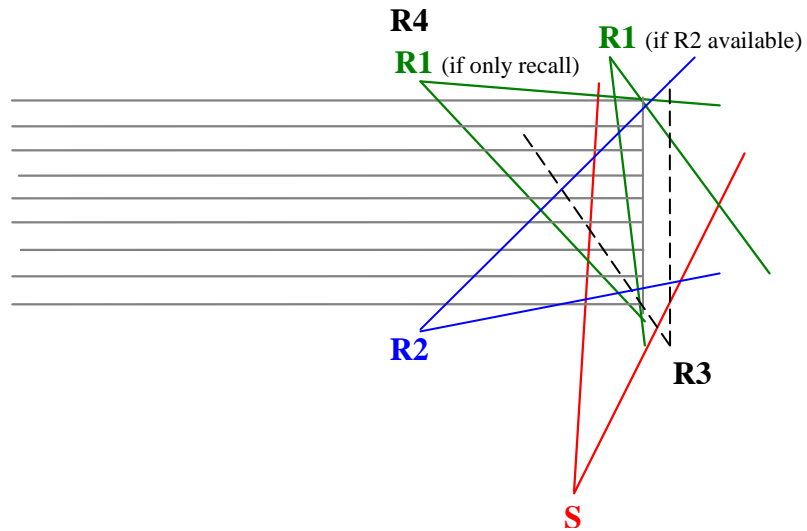


Figure 1. Straightaway races – Option 1

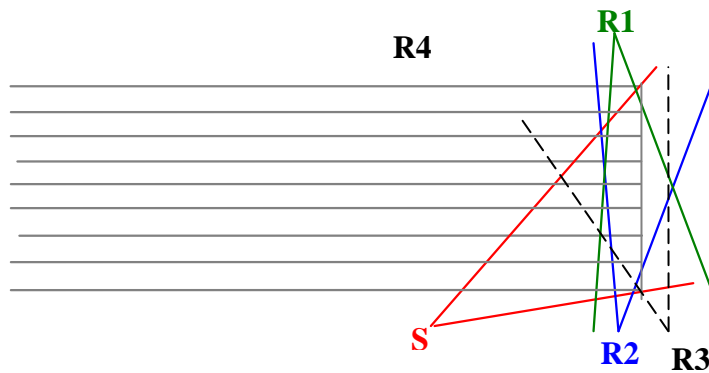


Figure 2. Straightaway races – Option 2

track (if the physical facilities allow), if the starter is out further from the start line (Figure 2). While the recall starter should be responsible for viewing the whole starting field, it is easier to encompass more runners in your field of focus when those runners are further away as opposed to those in the closest lanes. Therefore, the recall starter who must stand next to the edge of the track near the start line, because of a fence or the physical layout of the facility, should primarily focus on the five runners on the opposite side of the track, and keep track of the closest runners only in peripheral vision. The starter, while still covering the whole field, can focus on the five runners farthest from her side of the track, and the two will overlap on the middle two runners (assuming an eight lane track).

If a second recall starter is available and the starter is positioned closer to the start line, this person should stand near the edge of the track on the same side as the starter, about 8-10 meters in front of the start line (Figure 1) and the first recall starter on the opposite side of the track takes a position 1-3 meters in front of the start line, allowing more of a side view of the runners. Alternatively, R2 in Figure 1 can be near the starter, and R1 further down on the other side of the track. If the starter is further out in front of the start line, both recall starters should stand on opposite sides of the track about 1-3 meters in front of the start line (Figure 2), and 3-5 meters from the edge of the track (if possible). The two recall starters should “criss-cross” their field of focus, primarily viewing the five runners farthest from themselves, with the starter viewing the whole field and focused primarily on the middle of the track.

If there is a third recall starter, this person should stand 2-3 meters behind the start line on either the same side or the opposite side from the starter, and be primarily responsible for watching for slipped blocks. This position (R3 in Figure 2) also is an option for the second recall starter when working with two recall starters. If you have the luxury of a fourth recall starter, this person may be positioned either behind the start line on the side opposite the third recall starter, also watching for slipped blocks, or 8-10 meters out in front of the start line on the opposite side of the track from the starter. Of course, any recall starters positioned behind the start line also are in position to note any foot or leg movement indicating a false start.

Sprint races – staggered (echelon) starts (up to and including 800 M). Positioning for these races brings out one of the major differences between European and North American starter positioning. European starters favor a “behind the line” position with the starter positioned near the outside of the track (or inside for a 1-turn echelon) entirely behind the competitors so the starter can keep visual control of all the athletes (Figure 3), and North American starters favor an equidistant position on the infield (Figure 4). While there is no problem with the behind the line position when a “silent gun” is being used (i.e., an electronic gun sounding only through speakers on each set of starting blocks), North American starters feel the behind the line position when using a “live gun” is not an optimal position, since it creates problems with detecting forward movement before the gun and problems with the sound of the gun reaching lane 8 well after the inner lanes (nearly 0.2 second difference between lanes 1 and 8 in a 2-turn stagger). There is considerable data showing a flat curve of equal response times across all lanes when the starter is in the “equidistant” position, and a marked increase in response times from lane 1 to 8 with the starter using a “live gun” behind the start line.

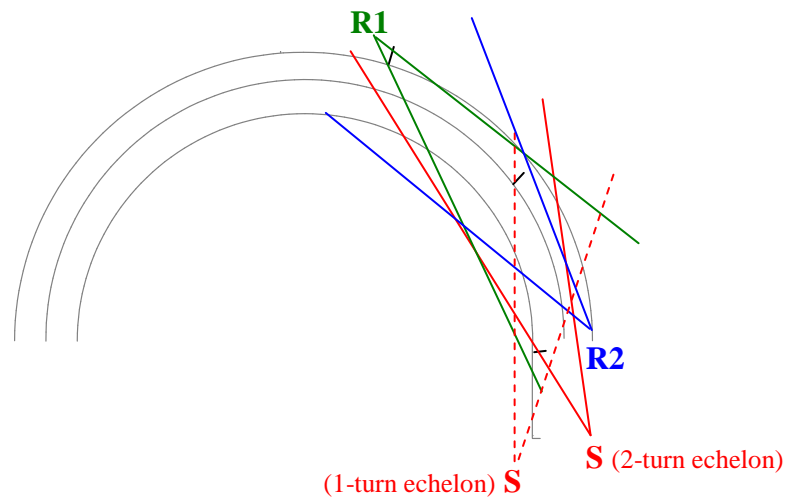


Figure 3. Staggered (echelon) starts for 200M-400M-800M (Option 1, recommended for use with “silent gun”)

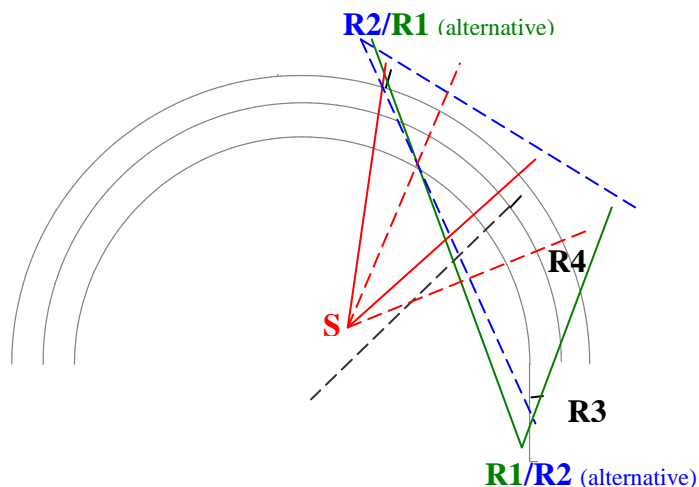


Figure 4. 200M-400M-800M – Starter and Recall positions (Option 2)

This brings up major concerns about a starter’s primary responsibility to ensure an equal and fair start for all competitors when the behind the line position is used with a live gun. [For discussions of why this starter position should not be used with a “live gun”, see A.L. Julin and J. Dapena “Sprinters at the 1996 Olympic Games in Atlanta did not hear the starter’s gun through the loudspeakers on the starting blocks” in the IAAF research journal *New Studies in Athletics* 18(1):23-27 (2003); and see J.R. Young, “One, Two, Three, Go!” Ottawa: Athletics Canada (2001) pp. 70-82.] Even with speakers on the starting blocks there is a problem with the athletes either reacting to the sound through the air rather than through the speakers, or reacting to the speaker sound and then thinking the later arriving sound through the air is a recall gun. Because of these concerns, there is a strong argument for the view that starter position behind the start line on a staggered start is appropriately used only when a “silent gun” is being used. The IAAF has understood this for some time and has required the use of a “silent gun” at its world championship meets for many years. But it was only recently that the manufacturer supplying the Olympic Games had a “silent gun” available, and it was used for the first time at the 2012 London Olympic Games. (See Appendix B for further comments on this issue by the author.)

Ideally, in the North American view, when using a “live gun” for races using an echelon or staggered start (200M, 400M and 800M) and with at least one recall starter available, the starter should be located on a raised platform on the infield approximately equidistant from lane 1 and lane 8, and providing the preferred side view of all competitors (Figure 4). This has been found to be the position that provides the fairest starting conditions for all competitors with regard to sound travel and reaction times, and with regard to the starter’s view of the athletes (assuming at least one recall starter is available). To ensure a reasonably equidistant position, it should be slightly to the left of the line from the origin of the radius of the curve through the midpoint between the start lines for lanes 4 and 5 for an eight lane track, or through the start line for lane 5 on a nine lane track (as indicated by the black dashed line in Figure 4). The number of meters from the inside edge of the track for the starter’s position will vary from one facility to another, but normally you can expect a reasonably equidistant position to be (from the center of the radius) between one-quarter and one-half of the length of the radius.

The starter’s position also may be dictated by the physical facility. For instance, there may be a fence on the inside of the track blocking easy access to the infield. Or the “ideal” position may be in the landing area for the discus or javelin, or in the middle of an active high jump or pole vault area. In such cases, the starter may need to stand near the inside edge of the track beyond the competitor in the

outermost lane, or take the “behind the line” position. As shown in Figure 4, the recall starter could be positioned on the inside of the track slightly behind lane one, looking up the front of the line of competitors with a view of all of them, keeping them in a fairly narrow field of vision. Alternatively, the recall starter can be stationed on the outside of the track beyond the competitor in the outermost lane, looking back down the row of competitors, with the starter in an equidistant position on the infield.

If there is a second recall starter, that individual can take the position not taken by the first recaller, on the inside or outside of the track looking up or down the line of runners. An alternative position for the second recall starter is on the outside of the track behind the level of lane 1, with a view of all competitors from behind. From this position the recall starter can also watch for slipped blocks. If there is a third recall starter, this person should stand near the outside of the track at about the level of lane 1, watching for slipped blocks. On those occasions when a fourth recall starter is available, the third recall starter should be positioned on the outside of the track at about the level of the start lines for lanes 2-3, and the fourth recall starter on the outside at about the level of lanes 5-6, both covering half the field and watching for slipped blocks.

An alternative equidistant position developed several years ago in Canada by 1976 Olympic chief starter Joe Young is illustrated in Figure 5. Here the starter is in the equidistant position in the infield, with a preferred side view of the athletes, and is joined there by two recall starters (one if it is a 200M) who both are in the starter’s field of view. The starter views the middle lanes and the recall starters observe the inner and outer lanes, also from the preferred side view. A simple signaling system used by Canadian starters is for the two recall starters (R1 and R2 in Figure 5) to hold the non-gun hand down at the side at the “On your marks” command. The arm with the palm held horizontal is brought up to a horizontal position to signal all is ready for the “Set” command; when all runners in their view are in stable set position, the hand is quickly rotated up at the wrist with the thumb up to a vertical position. Both recall starters are in the line of sight of the starter, who can readily see the recall starters’ signals. An alternative sometimes used is to have a rolled up colored starter’s sleeve held in the non-gun hand held horizontal initially and snapped up when everyone is in the set position.

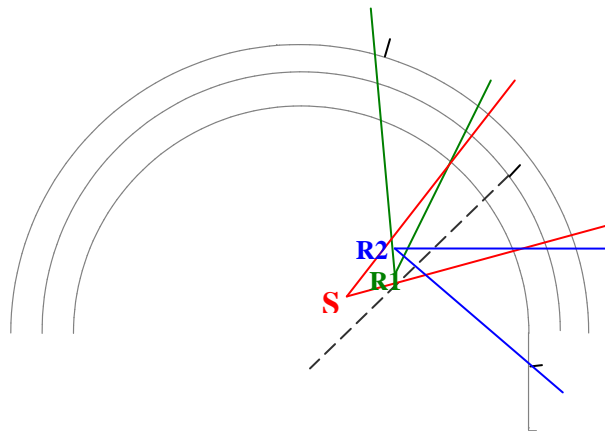


Figure 5. 200M-400M-800M – Starter and Recall positions (Option 3)

If the starter is working alone, which often may be the case in small local meets, the starter may stand in Lane 8 on the outside of the track behind the start line, so there is a good view along the line of competitors and they are all in a relatively narrow field of vision (Figure 6). An alternative most often used in North America is for the starter working alone to stand outside of the track beyond the Lane 8 start line, looking down the line of competitors in a narrow field of view. In this case, the need for

visual control of all competitors to prevent missing a false start must be the primary consideration, outweighing the need to have an equidistant position for the sound of the gun.

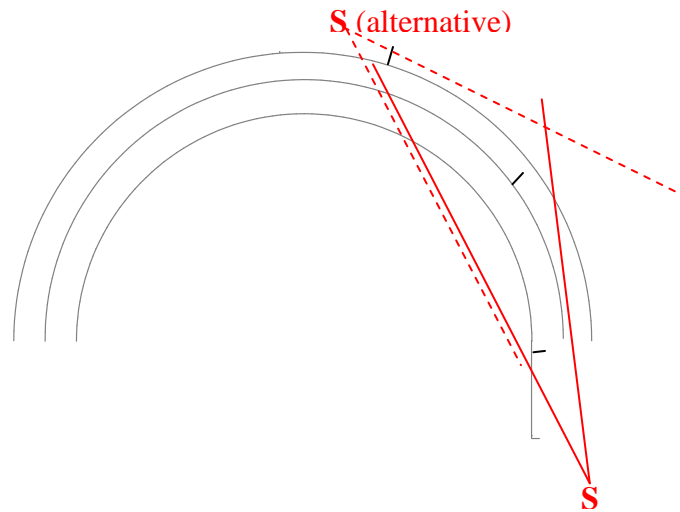


Figure 6. 200M-400M-800M – Starter working alone

Relay Races (4x400, 4x200). The most difficult races for the starter crew to cover are the relays with long staggers, the 4x400 being the common one, and the 4x200 being seen occasionally. This is a situation where the starter must be willing to trust the recall starter(s), because not all lanes can be seen in one view. Again, the two primary factors of visual control and equidistant sound carry have to be considered, and are particularly important in these events. One option is the behind the line position noted in Figure 3, with the recallers moved further around the curve. An alternative position for the starter when working with two or more recall starters is again on the line defining the radius through the midpoint between the start lines for lanes 4 and 5 on an eight lane track, or through the start line for lane 5 on a nine lane track (Figure 7). In this case the most equidistant position for sound of the gun will be essentially at the center point of the turn radius (if possible, given the physical facility).

A minimum of two recall starters are necessary, and can be positioned near the starter as shown in Figure 5. As an alternative, the first recall starter can be positioned near the outside of the track near the start line for lane 7, looking back toward the finish line and viewing lanes 5 or 6 through 2 or 3 (Figure 7). The second recall starter would be on the outside of the track between the start lines for lanes 3 and 4 and viewing lanes 1 through 3. Often there may be a judges stand, signs, or other obstructions near the finish line blocking the view of lane 1 for the starter and the recall starter in position R1.

If there are additional recall starters, they can be placed as indicated in Figure 7, primarily watching for slipped blocks from behind, but also for false starts. The starter views lanes 6 or 7 through 8 or 9. In these situations the starter is not going to be able to check all lanes after the “Set” command, and will have to depend on signals from the recall starters beyond those normally used for indicating readiness for the “On your marks” command. The simple signaling system used by Canadian starters is suggested, as described earlier. R1 would not signal until he has seen the signal from R2, and the starter keys on R1. Obviously, this “relay” of signals has to be done with no delays.

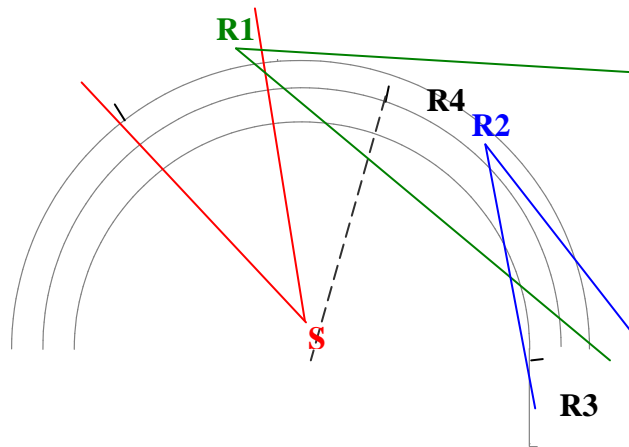


Figure 7. 4x400-4x200 – Starter and Recall positions

A starter working alone has a major problem with these events if more than three or four lanes are being used, which can be reasonably solved only by getting someone, possibly from the finish line crew, to act as a recall starter. Figure 8 illustrates the two suggested positions for this situation. The starter stands on the outside of the track in Lane 8 and behind the start/finish line, or beyond lane 8 (or 9) on the outside of the track looking back to view lanes 8 or 9 to lanes 3 or 4. The recaller will be toward the outside of the track approximately at the level of the start line 5 (for a nine lane track) or between the start lines for lanes 4 and 5 for an eight lane track, viewing the outer lanes or the inner lanes, depending on the position of the starter. The signaling system will be the same. If there is not a spare starting gun available, the volunteer recaller will have to be given a whistle to signal any call up or false start. While this positioning violates the equidistant sound factor, visual control must take priority when the starter has to use a volunteer recall starter in these situations.

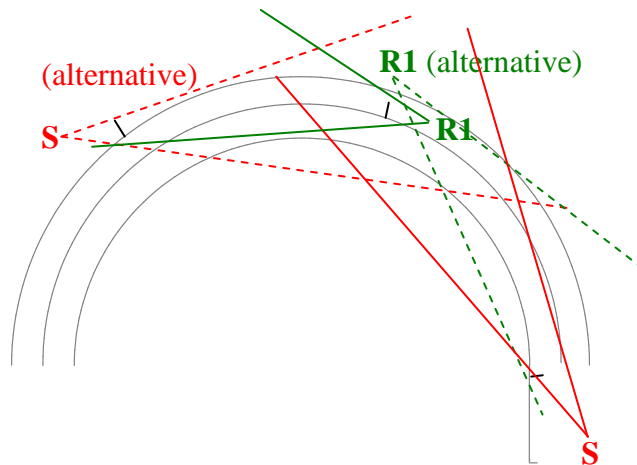


Figure 8. 4x400-4x200 – Starter working alone (with volunteer Recall)

Distance races (1500 M or longer). For distance races the starter should stand about 4-5 meters in front of the start line, either on the inside or the outside of the track, depending on personal preference, physical facilities or location of the sensor cable. If a recall starter is available, this person should be positioned on the outside of the track opposite the starter about 2-3 meters in front of the start line, watching to warn runners to keep their toes off the start line. A second recall starter can take a similar position on the same side of the track as the starter. If desired, upon the command “On your marks,” a recall starter or starter’s assistant on the line can move quickly along the line checking for toes on the line, finishing in her final position for the start. If there are two recall starters or starter’s assistants on the line, they can begin standing together in the middle of the track and move in opposite directions,

checking for toes on the line, until they reach their final positions on the inside and outside of the track. Of course, the starter must be careful to not fire the gun until these people are clear and in position. In races where the athletes are divided into two groups on separate echelon start lines, the starter should stand on the inside of the track a few meters beyond the level of the start line for the outer group. If one recall starter is available, she should cover the regular start line, with the starter covering the outer group start line. If two recall starters are available, one recaller covers each start line.

Starter's Stance and Mannerisms

The starter must be the primary calming influence at the start line. Body language can be critical, and therefore you should always appear to be a person who is in control and enjoying your job. Your stance should be upright and comfortable, so all your concentration can be devoted to the runners at the start line. Distracting mannerisms, such as unusual movements or voice commands, must be avoided. There normally is enough tension at the start line without a starter adding to it. Examples of distracting mannerisms include:

- Stern, rigid, loud vocal commands. (See next section)
- Pointing at the runners during the “On you marks” command.
- Nervous vocal noises such as constantly clearing the throat.
- Showing favoritism to certain runners by putting your arm around their shoulders, wishing them luck, etc. (This does not mean you cannot have brief friendly chats with runners during pre-race preparations; just avoid doing or saying anything that could be interpreted as showing favoritism.)
- Unusual vocal mannerisms. (See next section.)

Voice Commands

The importance of the starter’s voice control cannot be emphasized too much. A calm voice is one of the most important characteristics of the successful starter. The starter’s voice commands should be practiced regularly, so the volume and tone are consistent from the beginning to the final set command. Again, calmness is the key. Avoid unusual mannerisms, such as long, drawn out commands; this can be very distracting to athletes. Keep the commands in a normal conversational cadence. The “Set” command should never be forcefully or sharply spoken, nor should it be long and drawn out. It can be quite disconcerting to the runners in the blocks to have a starter give the set command in a tone starting with a low “s” and finishing with a high “t,” or the opposite, a high “s” to a low “t.” It should be a crisp, normal spoken command, just loud enough to be easily heard by the runner furthest from the starter. Yelling the “Set” command also will always disrupt the atmosphere at the start line. (While we are talking here about the starting commands in English, the same principles apply for the commands in any language.) Care must be taken to maintain a calm, consistent intonation throughout the command cycle in order for all the competitors to hear and comfortably react. You might try using a tape recorder when practicing voice commands (or during a meet) to get an accurate idea of how you sound. If there seems to be confusion or problems at the start line, it could well be due to the vocal commands of the starter.

If the meet will be long, with a lot of races, or if it will be taking place with a large, noisy crowd, it is a good idea for the starter to have a portable speaker system if there is no speaker system as part of the timing system. This helps a great deal in saving one’s voice at the end of a long day. The speaker

system should be easily portable and provide a crisp, clear sound projecting over a wide area. Set the volume so it is just loud enough to be easily heard by the athlete furthest away. A hand-held electronic megaphone is one option, but a better option is speaker box with a hand-held microphone with a long cord. An even better option is the speaker box with a lapel microphone to clip to the shirt or jacket and a radio link to the speaker box. With this system you can place the speaker wherever you need to in order to most efficiently project to the athletes while leaving you free to place yourself wherever you need to be for the best visual control of the athletes and equidistant for gun sound-carry without being tied to a microphone cord. Remember to always carry spare batteries for your speaker system and radio link.

Arm Signals

Starter to finish line (and competitors). The use of arm signals by the starter during the command cycle is primarily for the benefit of the timers at the finish line, so they know when to expect the gun to start the race. However, arm signals also can be of assistance when it is difficult for the runners to hear because of crowd noise or if there is a runner with a hearing impairment among the competitors, or in cases where there is a significant distance between the starter and the runners and a sound system is not available.

Prior to the start of every race, there must be communication between the start line and the finish line, to ensure that everyone is ready for the start of the race. Ideally, there should be radios or walkie-talkies available to one member of the starter crew, the head timer, and the photo timer if one is being used. This greatly simplifies communications between these groups of officials. In the absence of radio communications, the head timer should have a red and a white flag. The starter gives a long blast on a whistle to indicate that the start line is ready to begin the race, and the head timer responds with a white flag if the finish line is ready, or a red flag if the finish line is not yet ready (after checking with the photo timer crew if automatic timing is being used). Even if radio communications are available, it may be a good idea for the starter to use a long blast on the whistle before going into the command cycle, to let people in the infield and in the stands know that a race is about to start. In larger national and international meets it is becoming common to have a Finish Line Coordinator assigned to check on the readiness of the finish line crew and automatic timer, and handle the signal flags (also see the section on the IAAF Start Coordinator).

Before the start of every meet, the starter should meet with the finish line crew, to let them know what arm signals will be used during the command cycle. The IAAF rule book is silent on the issue of starter's arm signals. However, when you are working with experienced timers, the less motion the better. If you know you are working with an experienced timing crew, you can simply raise the gun to a vertical position just prior to the "Set" command and keep the other arm at your side throughout the whole command cycle. If you are using a sound system, you may have a microphone or loudspeaker in your other hand. An alternative method of signaling the finish line common in international use is to raise the gun arm to a horizontal position at the time of the "On your marks" command, and then raise it to the vertical position just before the "Set" command, keeping the non-gun arm at your side (or holding a microphone, or a recall gun). For distance races, simply raise the gun arm to a vertical position just before giving the "On your marks" command and keep it there until the gun has been fired.

In some countries it has become the custom for the starter to have a second gun in the "off hand" to use for recalls, which means any microphone will have to be a lapel microphone, on a headset, or mounted

on a stand in some fashion. The rationale for using a second gun for the recall is to help provide a slight delay in firing the recall shot, so it is clearly evident that it is a recall shot (neurologically it takes a bit longer to transfer the “pull the trigger” message over to the other hand than to do a quick repeat pull on the trigger of the primary gun). The second gun also is critical if the primary gun jams or misfires.

There may be occasions where a whistle signal should be used instead of voice commands to the runners, such as in a 3-turn stagger start (4x400 relay), or a 4-turn stagger start (4x200 relay), when no sound system is available. If whistle signals must be used, the athletes must be given specific instructions about the signals prior to the race. The simplest method is to use several short blasts on the whistle to signal the runners to stand behind their blocks. Then one long blast signals them to get “On your marks”. When everyone is in their blocks and motionless, a short crisp blast on the whistle signals the “Set” command, and then the gun is fired. The arm signals used throughout the meet should be used in conjunction with the whistle commands. If there is a need to bring the runners up from their blocks (because of a disturbance, etc.), use several short blasts on the whistle.

Recall starters/starter’s assistants to starter. Non-verbal communication between the recall starters and/or the starter’s assistants and the starter is important during the command cycle. Two methods are most commonly used in which the recall starters or starter’s assistants let the starter know that they feel everyone is settled in their blocks and ready for the “Set” command. In the first method the recall starters and/or starter’s assistants stand with their hand (non-gun hand for recall starters) held normally at their side after the “On your marks” command. When they feel the runners are ready for the “Set” command, they turn the palm of the non-gun hand out to face the starter. An alternative is to start with the palm open or out, and then turn it in toward the body when the runners are ready. In the second method they stand with their non-gun hand held out to the side, bent 90 degrees at the elbow, upon the “On your marks” command. Care should be taken to ensure the arm is held at an angle perpendicular to the line between the recall starter/starter’s assistant and the starter, in order for the arm to be readily visible to the starter. When it is felt the runners are ready for the “Set” command, the arm is lowered to the side of the body or brought behind the back.

Either method works well, and each start crew should decide what they feel most comfortable using. The advantage of the first method is that it is less conspicuous. The advantage of the second method is that it is more readily visible to the starter in peripheral vision, so the starter does not have to be distracted by consciously looking at each individual for the signal. This can be particularly important in races with staggered or echelon starts. When there are two or more recall starters/starter’s assistants spread out over a wide area (for instance, with a three-turn stagger), instead of trying to spot all these individuals, it may be helpful to the starter to key on the nearest for the “All is ready” signal. Have that individual “on the point” on the outside of the track with a better view observe the others and lower the arm or turn the hand only after all the others have.

Relay races. One additional area where the starter must be concerned with signals is the start of the 4x100 relay. Often it is difficult for the starter to see and know when the relay exchange zones are ready. It is recommended that before the meet the starter talk with the head umpire to arrange a simple signaling system. One umpire in each of the three exchange zones should be designated to raise a yellow flag while the athletes are getting prepared, and then raise a white flag when everyone is ready. The umpire in the second exchange zone should not raise a white flag until the white flag is seen in the third exchange zone, and likewise the umpire in the first exchange zone should not raise a white flag until a white flag is seen in the second exchange zone. The starter should key on the umpire in the first exchange zone, knowing that when that white flag goes up all zones are ready for the start of the race.

Reasons to Halt the Starting Process

At any time during the cycle of starting commands, if either the starter or the recall starter feel it is not possible to produce a fair start or they are not satisfied that the start has been fair after the gun goes off, they may terminate the starting procedure. This is accomplished by calling the runners up from their blocks with a command of “Stand up” (or “Roll back” in the case of wheelchair athletes), or recalling them with a second shot from the gun. If there has been any condition or circumstance at the start line that could be a distraction to the athletes, it is the responsibility of the starting crew to abort the start and correct the situation, so all competitors have a fair and equal start. If there is any doubt that everything is not right, it is better to bring the runners up and start again, rather than hope the situation “really was not that much of a problem”. The starter must always be in control and anticipate problems. If a noisy crowd is close to the start line, ask that they help you out during the starting commands (e.g., “Please don’t snap the shutter on the camera during the “Set” command”, “Please don’t kick the fence”, “Please remain quiet”). If you are courteous to the spectators, usually they will respond in kind.

Sprint races. The following are examples of situations that could cause the starter or recall starter to bring the runners up out of their blocks or call them back after a sprint start.

- 1) *Runner's request.* At any time from the “On your marks” command until the gun goes off, a runner may halt the start of a race by raising a hand to request a delay. This can be done for any of several reasons; e.g., the blocks not being properly adjusted, dirt or dust blown in an eye, or crowd noise. But this should be for a legitimate reason. If the starter feels the athlete has halted the process for no legitimate reason, or to play “mind games” with the other competitors, the starter should request a yellow card warning to the athlete that a repetition of that act will result in a disqualification. Under recent IAAF rule changes, this should be done by the Start Referee, if one is available, or the Track Referee or Meet Referee if there is no Start Referee. This yellow card warning is to the individual athlete for improper conduct and has no relation to false starts; in such cases the rest of the field should be shown a green card. (See the later section on “Working with the Referee in Improper Conduct Situations”.) It also should be noted that the athlete is not allowed to briefly raise the hand and then run out of the blocks. Technically, this can be considered a false start and could be charged as such. The athlete should raise a hand and wait for the command from the starter for everyone to come up.
- 2) *Crowd control.* If the starter feels there is enough noise from nearby spectators that it will distract the runners, or someone is playing a radio too loud, the command cycle should be halted until the situation can be corrected. Again, a courteous request to the spectators is generally all that is needed. On occasion the starter may have to delay a start to wait for the crowd to stop their rhythmic clapping for a field event competitor. In such cases, be patient; it should only take a few seconds, and it is better to delay those few seconds than to risk an unnecessary false start because of crowd noise.
- 3) *Starting block problems.* Some starting blocks used by schools can be difficult to set, especially for young, inexperienced runners. Be patient, but firm in urging quick setting of the blocks, especially if there are many preliminary races to be run. The recall starters and starter’s assistants should be prepared to step in quickly to help the younger, inexperienced runners in these cases.
- 4) *Fingers on the line.* If an athlete has settled into the blocks with his or her fingers beyond the front edge of the start line (i.e., the fingers are on the white line), the athletes should be brought up and the offending athlete advised to properly place the fingers behind the start line. Usually a recall starter or a starter’s assistant is in the best position to see this. If this is noticed early enough, the recall starter or a starter’s assistant can quietly advise the athlete to move the fingers back, but if the “Set” command is imminent it is best to bring all the athletes up and then correct the problem

(preventive officiating). This is a problem that sometimes can be prevented by recall starters and starter's assistants carefully observing athletes before the race during warm-ups at the start line. If an athlete is seen settling into his marks position with the fingers on the line, the recaller or starter's assistant can step in and remind the athlete to keep fingers behind the start line.

- 5) *Obstructions on the track.* Once in a while someone not paying attention will wander onto the track, or a piece of waste paper may blow onto the track in front of a runner, just as the "Set" command is about to be given. A runner may notice and raise a hand, or a recall starter or starter's assistant may see it through peripheral vision.
- 6) *Slow athlete.* Occasionally an athlete will be slow in getting the warm-up clothing off, or take too long in getting settled into the blocks. During cold or rainy weather athletes may wear several layers of warm-ups, so a special effort should be made to ensure removing them does not delay everyone. The starter can help forestall this problem by telling them to get their sweats off a little earlier than normal in such weather. Once the "On your marks" command is given, there is no specified amount of time before the "Set" command. It will vary, and the starter must be somewhat intuitive in feeling when it is the right time to give the "Set" command and when it is taking too long and the runners should be called up.

Often sprinters and hurdlers have their own special routines they go through as they get settled into the blocks, and sometimes these rituals are still being performed while everyone else is ready in the blocks. If one or two athletes are holding everyone else up, call them all up and caution the individual(s). In cases where this seems to have been a blatantly purposeful act, the starter can request the referee to issue a yellow card warning for improper conduct to the individual. If an athlete persists in delaying everyone after such a warning, the starter can request the referee to red card (disqualify) the individual. (See the later section on "Working with the Referee in Improper Conduct Situations".)

- 7) *Meet-oriented problems.* Even if the starter has spoken with the announcer prior to the meet about not talking while the runners are in their blocks, occasionally the announcer will begin an announcement just before or just after the "Set" command. The runners should be brought up immediately, and the starting sequence begun again. Other problems include things like the finish line not being ready, the photo timer not being ready, or an athlete being in the wrong lane. Any number of situations such as these may cause a delay, and this is a time when the calm demeanor of the starter is important.
- 8) *Wrong start line.* On older tracks that were built to 440 yards rather than 400 meters, there often exist two sets of start lines for each race, one for metric races and one for races in yards. This sometimes can cause confusion when lining athletes up for the start of a race, particularly races with staggered or echelon starts. For this reason, the starter should always go over the track prior the meet to make sure the correct location of each start is identified and the color code for each distance is known. For races with staggered starts, the recall starter looking up the line of runners should be able to see if one runner happens to be placed on a wrong start line, because that individual will be clearly "out of line" with the other runners.
- 9) *Inclement weather, outside noises.* Weather can sometimes cause a delay, if there is a sudden downpour. If there is lightning in the vicinity, it is wise to delay until the storm front has passed, especially if a longer race is about to start. In US high school and university meets it is a requirement that the competition be halted when there is lightning in the area, and activities are not resumed until 30 minutes after the last observed lightning or thunder. This is a good rule of thumb for everyone to use. (See <http://www.lightningsafety.noaa.gov> for useful information on lightning safety.) Outside uncontrollable noises may sometimes occur, such as a low-flying airplane, a nearby locomotive that decides to blow a whistle just at the "Set" command, or a clock tolling the hour. In all such cases it is best to bring the runners up and wait for the disturbance to pass.

10) *Slow roll-up.* During the pre-race instructions (whether given by the starter, the clerk, or the starter's assistant), the athletes should be told that upon the "Set" command they are to come immediately up to their full and final set position without any hesitation or slow roll-up. If a slow roll-up does occur, the runners should all be called up immediately and the individual cautioned. In meets where the runners are disqualified after the second false start (e.g., Masters or combined event competitions), some runners tend to play games with the starter and the rest of the field. Having a "free" false start, a runner will sometimes hesitate on coming up for a fraction of a second after the "Set" command, and try to "roll" into the start without ever coming to a completely still set position. In meets where the no false start rule is in effect, this usually is not as much of a problem.

Another related action to watch for is the buttocks slowly settling or drifting down after reaching the peak "set" position. While a brief "settle" is not uncommon among many sprinters and generally is not a problem, the starter and recall starters should watch for any delayed or lengthy downward movement. This could be an alternative way to attempt to "roll" into a start, and it could be distracting to competitors on either side to the point of causing them to false start. If this movement is seen, the athletes should be called up and the offending athlete verbally warned, or the referee requested to issue a yellow card warning if this has been a persistent problem. A red card should be issued by the referee if the athlete persists in this action after being warned. (See the later section on "Working with the Referee in Improper Conduct Situations".)

The slow roll-up or the slowly responding athlete also are problems that potentially can be prevented by careful observation of the athletes by the recall starters and starter's assistants during warm-ups at the start line before the race. If an inordinately slow rise to the set position is observed, or a long, slow settling after reaching the peak height, the recaller or starter's assistant can step in and advise the athlete that they must respond quickly to the starter's commands and come quickly to the set position and then remain still until the gun is fired. This type of pro-active preventive officiating has been found to prevent many instances of these types of problems and the delays they cause at the start of a race.

11) *Bad shell/misfire.* If the gun malfunctions, or a shell is a dud, the runners should immediately be called up and the problem corrected, then the runners called to their marks again. Although it may be hard to admit, it has been known that a misfire was due to the starter forgetting to load (or reload) the gun. This is one of those embarrassing situations that hopefully happens only once in a career. It is highly recommended that the starter replace the spent shell after each start, ensuring the gun always has a full load of good shells.

12) *Flinch or buck.* During the momentary hold at the peak of the set position, a runner may "flinch" or "buck" yet not break contact with the ground with the hands or break contact with the blocks. This action will cause the runner to move slightly forward or upward and then slightly back. If the gun is fired in the middle of this flinching action, the other runners are going forward while this runner is still going back. In such a case you are faced with a dilemma. You could let the race go on, based on the viewpoint that the athlete who flinched "dug his own hole" (a somewhat questionable philosophy if you are supposed to be there to ensure everyone gets a fair start). While this athlete was moving, he certainly was not gaining any advantage because he was moving back when the gun fired, and you could interpret this as an unfair start and call the runners back with no penalty to the runner who flinched. On the other hand, there also is a valid point of view that holds that recalling and starting again allows this individual to correct their mistake while in some sense penalizing all those who had a fair start and now possibly have lost concentration because of the recall. Until recently a possible third point of view insisted that the athlete who flinched has broken the rule requiring he be still until after the gun goes off, and should be charged with a false start. But this view no longer is valid given a new IAAF interpretation and subsequent rule changes

defining what constitutes “commencement of a start”, to be discussed in the later section on False Starts.

How to handle this situation in any given case may depend on how extreme the flinch was, and whether or not it could be considered an unquestionable full commencement of the starting motion (see later section on False Starts). There are valid pro and con arguments for either of these responses to a flinch or buck, and which response is chosen in a given situation will always be a subjective decision on the part of the starter.

However, if the runner who flinches draws a runner in an immediately adjacent lane into a false start, the race should be recalled and the runner who false started should not be charged but the runner who flinched should be charged with improper or unsporting conduct by the referee, since by his actions the athlete has “disturb[ed] other athletes in the race through sound or otherwise”.

If the flinch occurs early in the pause between the “Set” command and the gun, it may be possible for the starter to “wait it out” and let everyone stabilize before the gun is fired. If the flinch occurs late in the pause before the gun, or if more than one runner flinches, the starter (or the recall starter) should call everyone up, calm the athletes down, and start the command cycle again. This is basic preventive officiating, giving the athletes the benefit of the doubt.

Given the explosive atmosphere at the start, there occasionally will be movements of this type, and the starter crew must be prepared to handle these instantaneous situations. If a race is called back because of a flinch or a false start caused by a flinch, the starter should briefly confer with the recall starters to get input from other pairs of eyes and make sure all agree on exactly what happened before making the call.

- 13) *Slipped blocks.* Watching for slipped blocks is one of the key responsibilities of the recall starters. The two primary ways of immediately detecting slipped blocks are by the clattering sound they make when they slip, or by noting a runner stumbling or seeming to hesitate awkwardly when coming out of the blocks. If a recall starter is assigned to watch from behind the start line, the backward movement of the blocks can be seen directly. Often it can be seen that a pair of blocks is positioned considerably further back compared with the others, after the runners have left their marks. This is another major clue for recall starters to look for to determine whether or not blocks have slipped.

When slipped blocks are detected, the race should be recalled immediately, the runner involved should then be given time to readjust the blocks and all runners given time to refocus on the start, and then the command cycle started again. Blocks that have wing nuts, or other mechanisms requiring hand tightening, must be watched closely. If slipping continues, the recall starter or starter’s assistant should have someone hold the blocks during the start. Block holders should always be seated on the track surface, not standing, and should not place their feet on the backs of the pedals. Always caution block holders to stay back until the runner gets into the blocks, since some runners will kick backwards as they are getting into the blocks and could spike someone standing too close.

- 14) *Stumble.* If a competitor comes out of the blocks awkwardly and stumbles during the first or second step, the race should immediately be recalled, since this should be considered an unfair start. This might occur because the blocks slipped or because the athlete caught a spike on the track surface. At the instant it occurs you cannot be sure why it happened, but if there is any chance it was because the blocks slipped you should immediately recall because of an unfair start, giving the benefit of the doubt to the athlete. If the stumble occurs after the second step, the race should not be recalled, since the runner will have established a stride pattern at that point and is in a more upright position.

- 15) *Practice starts.* If you see an athlete preparing to take a practice start in your or your recall starters’ field of view, it is suggested that you ask the athlete to move out of your field of view so

there will be no possibility of the athlete's movements distracting you or your recall starters or being mistaken for a false start movement.

Distance races. The following are examples of situations where the start should be halted or the runners recalled during the start of a distance race.

- 1) *Runners not steady.* If the runners are not steady or still after coming up to the start line, they should be brought up and reminded to stay still on the line until the gun is fired. The start also should be halted if a runner is off balance and is falling forward. In these situations the runners should be brought up off their marks by the command "Stand up," given a quick explanation, and set back three meters for another walk up start. (See also the recent interpretation of the application of the no false start rule to distance races noted in the later section on False Starts.)
- 2) *Toes on the line.* When the runners come to the line in a walk up start, if one or more runners have a toe on or over the line, the runners should be brought up and reminded to keep their toes behind the start line, and then set back for another walk up start. Again, this is basic preventive officiating. If one or two recall starters or starter's assistants are assigned on the start line, an option is to have these individuals move quickly down the line checking toes and verbally instructing any runners with their toes on the line to move them back. Of course, the starter has to wait for the recall starter(s) or starter's assistant(s) to clear the line before firing the gun.
- 3) *Fall during the start.* If a runner slips, stumbles or falls anywhere during the first 5-10 meters of a distance race, this should be considered an unfair start, the race should be recalled, the runners given a chance to catch their breath and refocus, and then set up for another walk up start. This situation may occur on a wet, slick track, or on an indoor board track.

In all cases, for both sprint starts and for distance starts, the best "rule of thumb" is common sense. If the starter or the recall starter feels someone is at a disadvantage, the race should be recalled or the start halted. If there is any doubt, start the race again. Just because a recall gun has been fired, this does not automatically mean someone has to be charged with a false start or disqualified.

Pulling the Trigger

Pulling the trigger to start the race is the *sine qua non* of the starter's trade. The starter should be very familiar with his or her gun, and know the feel of it and how much slack is in the trigger. It should feel comfortable in the hand, and have a fairly tight trigger. A hair trigger should be avoided in order to prevent firing a "fast gun" after the "Set" command. During the command cycle, the gun should be cocked just before the "On your marks" command is given. The finger should be closed around the trigger, taking out any slack, and then the "Set" command is given. At this point the gun may be fired, or the pressure may be let up on the trigger if the runners must be called up off their marks. If the gun has a hair trigger, this is not as easy to do, because it is harder to let up pressure on the trigger without firing. The starter should avoid jerking the trigger when firing, because the hand moves and this can be distracting to the timers. It also provides a visual cue to any runners who might happen to be watching the gun. The gun hand should be held still and solid throughout the command cycle until after the gun has fired and the runners are away.

While starters (and recall starters) need to maintain focus throughout the command cycle, it is particularly important during that period between the "Set" command and the firing of the gun. This is not the time for letting the mind wander to stray thoughts about the last race, the next race, or what you

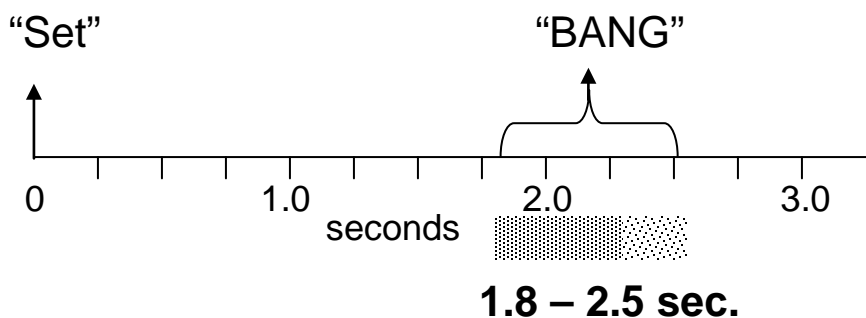
are going to have for dinner tonight. The entire focus must be on the athletes on the start line and their activity during the hold.

The “hold” is the length of time between the initiation of the “Set” command and the firing of the gun for races started out of blocks. *Any hold of less than 1.5 seconds does not allow the athletes sufficient time to get into the set position.* There are two activities that require sufficient time to occur between the “Set” command and the firing of the gun. First, the starter needs to ensure that all the competitors have come to a full and complete set position, and have stabilized or are still. IAAF rules state that following the “Set” command the gun shall be fired *after* the starter “is satisfied that all athletes are steady in the ‘Set’ position”. All this requires a finite amount of time to do properly, usually a minimum of 1.5 seconds to ensure that the athlete taking the most time in the field of runners is steady.

Second, consider what the athletes must do in sequence: they must hear and recognize the “Set” command, respond to it by directing the body to begin rising to the set position, sense when the body has reached the correct position, stop body movement, make any final readjustments (many sprinters have a tendency to “settle” slightly after reaching their top position, and you must wait for that settling to be completed), start applying constant pressure to the starting blocks, and then focus on listening for the gun and concentrating on the explosive reaction to the sound of the gun. While this becomes an almost automatic sequence with experience, this still takes a finite amount of time to complete for both the novice and the most experienced competitor. Even with elite athletes, the amount of time this process takes can vary considerably within any group of athletes at the start line. *If the gun goes off with less than 1.5 seconds of hold time, there is an extremely high probability that at least one runner has not had sufficient time to complete this process, and the starter has created a disadvantage for someone by firing a quick gun.*

The starter crew at Hayward Field in Eugene, Oregon, in the 1980s and 1990s worked together for many years doing a large number of national and international meets, and through our experience we came to a consensus that a good hold time will range from 1.8 to 2.4 or 2.5 seconds (see Figure 9). It is adequate to give the starter the time to view the field and adequate to give the athletes the time to get settled in the set position and refocus on reacting to the gun. This is what we strongly recommend during the starter clinics we have been giving for several years. [For an additional discussion of this topic, see A. Lennart Julin, “An alternative approach to solve the false start problem”, *New Studies in Athletics* 18(1):7-10 (2003); J.W. Aspland, “Starting and Timekeeping”, London: Amateur Athletic Association (1969) pp. 12-14; and J.R. Young, “One, Two, Three, Go!” Ottawa: Athletics Canada (2001) pp. 89-91.] For the short sprints and hurdles, the hold time normally will average near the lower end of that range. For the longer sprints with a staggered start, it will average near the longer end of the range in order to give the starter a little more time to scan the runners spread out on the staggered or echelon starting positions.

Figure 9: The “Hold”



When the starter is using a “live gun” and positioned at an equidistant point for staggered or echelon races, it is suggested that the starter begin a visual scan of the field of runners, starting either with lane 1 and scanning out to lane 8, or vice versa, immediately after giving the set command. This allows the starter to confirm that the entire field has heard and is reacting to the set command. And it should take about two seconds to complete this scan. This scan will not be for the purpose of determining that all runners are still the set position, only that they are responding to the set command. At the completion of the scan the starter will then focus on the outer four lanes (if the scan was started at lane 1) or the inner four lanes (if the scan was started at lane 8), leaving the remaining lanes to be covered by the recall starter(s), as is always the case when this positioning is used.

As noted in the last section, if you have to wait for an athlete who is slow in responding or reaching a stable set position, once you have gone beyond 2.5 seconds you should be ready to call the runners up. (It also should be noted that in some major international championship meets starters have been known to hold the runners for 3 to 3.5 seconds in order to be certain that all runners are still at the start.) A slightly longer hold is not unfair to the runners; they adjust quite readily. Many top level athletes have specifically noted they appreciate having enough time to get focused after the “Set” command, and have stated they would rather have enough time to get settled and reach their peak concentration than have a quick gun.

Every race will vary with regard to how long it takes for all competitors to become still and motionless, and therefore the length of the hold time will vary with every race, but still should be within the reasonable range noted above. A starter should never get in the habit of firing the gun at the exact same length of time after the “Set” command. Athletes will pick up on this very quickly, and it is a good recipe for having runners anticipate the gun. On rare occasions all of the runners in the field will come up immediately and together, being stabilized right away. In a case like this, there is no reason to hold them if everyone is stable, and the gun can be fired at less than 1.8 seconds; but this does not happen very often. Most of the time the starter has to watch for the athlete who is slow to react to the “set” command, and not fire until this last athlete is clearly still. And also be watching for the athlete who comes up to a peak set position, pauses, and then starts to slowly settle. The starter must wait and not pull the trigger until the last of these athletes are still. Of course, in either of these situations if it is taking too long for the athlete to become still, the starter should call the field up and warn the athlete(s) causing the delay.

It is a good idea for the starter to practice the voice commands regularly, at home in front of a mirror, or anywhere where others will not be disturbed. Use a stopwatch to time yourself from the beginning

of the “Set” command until you “pull the trigger” by punching the button on the stopwatch. It also is a good practice to have someone time your hold intervals between the beginning of the “Set” command and the gun during meets. This is excellent immediate feedback under real conditions. At Hayward Field we did this on a regular basis among ourselves on the starter crew, particularly at the beginning of a new season, to make sure we all were in the proper range for the hold time.

Developing trust between the starter and the competitors is very important. If, at the time of the instructions, the runners are told they will not get a quick gun and will be given time to get set, then that should be the case. To tell the athletes this and then fire a quick gun will very quickly break that trust, and the result generally is confusion and frustration at the start line.

False Starts - What to Look for and How to Handle Them

A starter who has given adequate instructions to the athletes, gained their trust and maintained a calm atmosphere at the start line normally will have few problems with false starts. Nevertheless, every time a race is started the starter and recall starters must be alert and fully prepared to immediately respond to a false start.

The IAAF rule book states that, after assuming a full and final set position, an athlete *shall not commence* his start until *after receiving* the report of the gun or approved starting apparatus. If the starting motion is commenced prior to (or less than 0.10 second after) the sound of the gun, it is considered a false start. These rule clarifications finally settled a difference of opinion that had existed for many years. The old rule wording appeared to allow an athlete to internally commence the starting motion before the sound of the gun (i.e., try to outguess the starter and get a “flyer”) as long as there was no detectable motion before the sound of the gun; so if the athlete moved exactly with the gun it was felt to be a fair start. This was the opinion of a number of athletes, coaches and even some starters. Now the intent is clear: the runner is not allowed to commence starting until after receiving the starting signal (i.e., the runner must *react* to the gun, not anticipate it).

A runner who begins movement out of the starting blocks before the sound of the gun normally will move the back foot and leg first, along with the opposite hand and arm. Unless there are enough recall starters to assign at least one to watching for slipped blocks, the starter and recall starters will have to key on the arm and hand movement, since it will be more difficult for them to see movement from the legs. Upon seeing any movement out of the blocks on the part of a runner before (or with) the sound of the gun, the starter or the recall starters should give the “Stand up” command if the gun has not yet fired, or fire a recall shot if the starter’s gun has fired. Be aware, too, of situations like “flinches” or “bucks,” or other extraneous factors (see the earlier section on reasons to halt the starting process, and the new IAAF interpretation of what constitutes “commencing a start” noted below). The starter or recall starters stationed more to the side of the runners are in a better position to see hand movement and rolling starts, although it is a little more difficult to see the runner who is slow coming to the set position. On the other hand, the starter or recall starter in a position further in front of the line is in a better position to see the runner who is slow coming to the set position, but it is a little more difficult to see the runner moving forward at the gun. With the combination of proper starter and recall starter positions, there usually is little opportunity for an athlete to succeed in making an unfair start.

It should be pointed out here that the recall starter should never have the gun cocked at the start of a race, and should hold the trigger finger outside of the trigger housing. If the trigger finger is on the trigger, there is a natural tendency for the recall starter to squeeze the trigger at the sound of the

starter's gun, or even before the starter's gun fires, resulting in an unnecessary recall. This can be highly embarrassing and, like forgetting to load the gun, is hopefully something that happens only once in a career. With a little practice, one can quickly become accustomed to getting the finger on the trigger and firing the recall shot within the first 2-3 strides of the race.

Upon calling the runners up or firing a recall gun, the starter should confer briefly with the recall starters to get their observations on what happened and who, if anyone, should be charged. If needed, the starter's assistants can be consulted for their observations as well. Even when it is very obvious who or what caused the recall, there should at least be brief visual communication among the starter and recall starters to ensure agreement. If a recall starter has seen or heard something that the starter apparently has missed, this should be noted immediately, since it could have an impact on the starter's decision. And the final decision is always the starter's alone.

In April 2012 the IAAF issued new guidelines for starters regarding what constitutes a false start (the most recent 2015 edition of "IAAF Starting Guidelines" can be found at: <http://www.iaaf.org/about-iaaf/documents/technical#manuals-guidelines>). The relevant text, most of which is now also included in Note (i) in Rule 162.6 of the IAAF Rule Book, reads:

“...not all movements in the “set” position are to be regarded as “commencing the start” and thereby potentially leading to a false start. Motion by an athlete that does not include or result in the athlete's foot / feet leaving contact with the foot plate / plates of the starting block, or the athlete's hand / hands losing contact with the ground, shall not be considered the commencement of the start. Such instances should be dealt with either by standing the field up or they may constitute a violation of Rule 162.5(b) or (c) invoking the disciplinary provisions.”

This wording essentially describes a “buck” or “flinch”, and this is not to be called a false start unless one or both hands leave the ground and/or one or both feet leave the pedals of the blocks. As noted earlier, a flinch or buck is one of the most difficult situations facing a starter, and often has been subject to varying calls by starters. The IAAF has now attempted to provide some objective guidance in how to handle these situations, to promote more consistency in the way they are called. It is not a perfect solution, but providing some guidelines and encouraging consistency in interpreting these situations is a positive move. The key here is going to be the starter being more prepared and more consistent in bringing the athletes up in these situations.

A further comment regarding the recent IAAF interpretation of “commencement” of a start: The wording appears to have led on occasion to a misinterpretation. There have been a few instances where an athlete has begun his forward movement with his body into the starting motion just before or right with the firing of the gun, but because neither hands nor feet had lost contact until after the gun fired it was not called a false start based on the wording of the new interpretation. This is an erroneous interpretation that appears to focus on only one of two possibilities described in the Note: “Any motion that does not include...the athlete's foot / feet losing contact with the footplate(s) of the starting blocks, or the athlete's hand / hands losing contact with the ground, shall not be considered to be the commencement of his start.” Despite his movement, the athlete did not lose contact before the gun. However, this ignores the second possibility encompassed in the phrase “or result in” contained in the Note. The sentence also says: “Any motion that does not...result in the athlete's foot / feet losing contact with the footplate(s) of the starting blocks, or the athlete's hand / hands losing contact with the ground, shall not be considered to be the commencement of his start.” And in this case the athlete's movement, before or with the gun, did result in a continuous motion that did result in his losing contact

with the ground and the footplates when he started. This Note is specifically intended to be applied to bucks/flinches, where there is movement that at some point stops at or before the gun is fired. In the type of situation we are considering here there was no stop in his motion; once it started it continued into a start. And in this case the Note does not apply. He should be called for a false start. If it is not interpreted this way, we get right back to the situation we were in until a few years ago when athletes, coaches, and some starters interpreted the false start rule to mean that if you were moving right with the gun you were OK (even though to be moving at the gun you had to be initiating your start before the gun sounded; i.e., getting a “flyer”). The IAAF Technical Committee said no, that should be a false start; so they changed the wording of the rule to say that the athlete cannot initiate a start until after receiving the sound of the gun or starting device. So for a starter this means that there has to be a slight, detectable bit of time (0.1 second or more) between the gun and any visible movement on the part of the athletes.

Something that always needs to be clarified in this kind of situation is whether or not the athlete's movement was continuous into his start, or if there was movement and then pull back to (very brief) stillness without the hands or feet losing contact (i.e., the "buck" or "flinch"). With a buck or flinch, where there is a perceptible pause after the initial movement (and which can be seen on the SIS waveform if electronic blocks are being used) and the hands/feet don't leave contact before the gun, then call them up, or recall, and possibly give a warning to the flincher, depending on how bad it was or whether they drew someone into a false start. That was the primary situation this new interpretation was meant to cover, in order to hopefully start providing some consistency in how bucks/flinches are handled, as noted earlier. But there is also that phrase "...or result in..." in the wording. This appears to have been included by the Technical Committee to cover those situations where the movement is not a flinch/buck, and there is no perceptible pause before the final start motion is initiated. If the movement just before the gun is a continuous movement into the start (i.e., a movement that "results in" the full starting motion), then it should be called a false start.

If an athlete is to be charged with a false start, it is the starter's responsibility to notify that athlete, although the rules now allow the starter to assign this task to another (e.g., a recall starter or starter's assistant with a diagonally-halved red and black card). However, the starter is still responsible for directing this task. Keep in mind there are many situations where there has been movement, but the runner does not have to be charged (e.g., extraneous noises, an adjacent runner flinching or bucking). Again, a competitor does not necessarily need to be charged with a false start every time there is a recall. IAAF rules require the runners be notified of a false start and a disqualification by showing a diagonally-halved red and black card; in cases where no one is being charged, a green card is shown to all competitors. In Combined Events, where there is not a disqualification on the first false start, a diagonally-halved yellow and black card is shown for the warning on the first false start.

After a recall for a false start, a good starter will avoid the tendency to fire a faster gun on the second start. This is a common failing, and the starter should consciously and scrupulously adhere to the normal pattern of hold times. For any starter, the fastest starts (i.e., the shortest hold times) tend to be the first start of the day and any start after a false start. There should be a conscious effort to avoid a quick gun in both situations.

After the high school and university governing bodies in the USA successfully used the “no false start” rule in the USA for 35 years, the IAAF recently decided to use this rule as well, and since the beginning in 2010 the “no false start” rule has been the common false start rule across most levels of competition. However, the old “two to the individual” rule will still be used in Masters meets (i.e., an individual will not be disqualified until that individual has committed a second false start). The IAAF

has retained the “one to the field” rule for Combined Events (i.e., the first false start is charged to the whole field, and upon a second false start the individual who committed it is disqualified, whether that individual committed the first one or not). So as a starter you still need to be aware of what type of competition you are working and which of the three false start rules applies to a given race (Table 1). And be aware that in a given meet there could be more than one rule applied (e.g., “two to the individual” rule for Masters athletes in one race, and “no false start” rule for open athletes in the next).

Table 1: False Start Rules

Level of Competition	Rule Book	False Start Rule used
Youth / Open / elite	IAAF	No false start rule
Combined Events	IAAF	“One to the field” rule
Masters	WMA	“Two to the individual” rule

Another new IAAF interpretation of what does or does not constitute a false start concerns stand up starts for longer races that do not use starting blocks. The new guidelines state that starters and referees “should avoid being overzealous in the application of the ‘zero start rule’” in these races. In general, when an athlete steps over the line before the gun it normally is because of losing balance or being jostled, and not because of intent to get an advantage, and therefore the athlete should not be penalized with disqualification. The athletes should be called up (or recalled) and reset to begin the command cycle again, with your decision being that the start was “unsteady”. This explicitly codifies an informal interpretation of the no false start rule held by many more experienced starters that it should be applied rigorously only to races using starting blocks. But if an athlete breaks out fast and hard from the line before the gun is fired, then the runners should be called up (or recalled) and that athlete should be charged with a false start. And if you observe an athlete step over the line before the gun because of being deliberately pushed, the athlete doing the pushing can be subject to unsporting conduct warning, or disqualification if it was flagrant.

IAAF Rules Regarding Starter's Authority

In the summer of 2001 the IAAF adopted a rule change that eliminated the phrase “and shall be the sole Judge of any fact connected with the start of the race” from the description of the starter’s duties and authority, thereby allowing the track referee to overrule a starter’s decision. This apparently was done in an attempt to allow recourse in situations where there was a clear false start that was not recalled by the starter or the recall starters. The USA Track & Field (USATF) Rules Committee felt that this was an unwise solution to the problem, which would open up to protest every race and every decision by the starter to recall or not to recall a race. It also could potentially result in inordinate meet delays while the protest is being considered by the referee and then the jury of appeal. Therefore, the USATF did not adopt this IAAF rule change, but instead formulated a new rule implemented in 2002 that stated:

“In races where a false start control apparatus is used, a protest may be based on the failure of the starter to recall a false start. The protest may be made only by, or on behalf of, an athlete who has completed the race. If the protest is upheld, the Referee shall disqualify the athlete who committed the false start.”

This was a very tightly defined, very limited change in the starter’s authority. It applied *only* in races where electronic sensor blocks are being used (at the moment that is essentially major national

championships and major international meets), the protest can only be made concerning a failure to call a false start (*not* when a false start *is* called), and the protest can only be made by or on behalf of a runner who completed the race. The referee will have the readout from the sensor blocks to guide the decision, and the only recourse is to disqualify the competitor(s) who false started (the race cannot be rerun). This got at the problem the IAAF was trying to fix, but did not greatly diminish the authority of the starter nor set up the possibility of major delays of the meet. Similar wording was adopted by the IAAF beginning with the 2006 season. In succeeding years this rule has been modified and expanded, and now reads:

“a protest may be based on the failure of the Starter to recall a false start or, under Rule 162.5, to abort a start. The protest may be made only by, or on behalf of, an athlete who has completed the race. If the protest is upheld, any athlete who committed the false start or whose conduct should have led to the start being aborted, and who was subject to warning or disqualification according to Rules 162.5, 162.6, 162.7 or 200.8(c), shall be warned or disqualified. Whether or not there may be any warning or disqualification, the Referee shall have the authority to declare the event or part of the event void and that it or part of it shall be held again if in his opinion justice demands it.”

Note that this rule (IAAF rule 146.4(b)) no longer requires that a Start Information System be used in order to apply this rule; there can be a protest based on the failure of the starter to abort or recall a false start in any competition.

There also is an IAAF rule 146.4(a) that states:

“if an athlete makes an immediate oral protest against having been charged with a false start, a Track Referee may, if he is in any doubt, allow the athlete to compete under protest in order to preserve the rights of all concerned.”

This parallels the situation in the field events where an athlete can have an attempt measured after a foul was called, in order to protect the athlete’s rights until a final determination can be made by the referee. The IAAF does not limit the ability of the athlete to protest a false start charge to situations where a Start Information System is being used. However, competing under protest will not be allowed if an SIS is being used, unless the referee determines the information provided by the device obviously is inaccurate.

Working with the Referee in Improper Conduct Situations

The IAAF has created the position of Start Referee, separate from the Track Referee, whose purpose is to closely observe and oversee the starts of all races. This Start Referee is now being used in major events throughout the world. This person ideally is a very experienced starter, but is not a part of the start crew and does not start races when working in this position. The Start Referee is to observe each start and render a rapid decision in the event of any protests regarding the start, and responds to a starter’s request for assistance with improper conduct situations, as described below.

As noted earlier, there may be those relatively rare occasions where the starter must deal with situations that can be considered unsporting conduct or improper conduct (for example, purposeful attempts by an athlete to distract others or disrupt the start by inordinately slow reactions to commands, or slow roll-ups, or raising a hand to abort a start for no legitimate reason). In the past, the

only apparent option the starter had was to charge the athlete with a false start, which worked well when the applicable false start rule was the old “two to the individual” rule. Normally the starter initially would give a verbal warning that any repetition of the improper conduct will result in a false start charge and a disqualification. This was in accord with the referee’s practice in other areas and events of giving a yellow card warning first, followed by a red card disqualification for any further infraction (although the referee does have the option of immediately issuing a red card in particularly blatant cases).

The IAAF has now added language in the rules that allows the referee to issue a yellow or red card in these situations at the start line. False start charges from the starter and improper conduct charges from the referee are completely separate and distinct from each other (false starts are indicated by diagonally-halved red and black cards and conduct charges are indicated by full red or yellow cards), and one has no impact on the other. The reason for giving this authority to the referee rather than the starter is because it is only the referee who normally has the authority everywhere else in the meet to issue yellow card warnings and red card disqualifications for improper conduct. In meets where there is a Start Referee, this individual will be immediately available to handle the situation at the request of the starter. If there is no Start Referee, then it would be the Track Referee, who should be close by and available. In smaller meets where there is no separate Track Referee, it will have to be the Meet Referee, who may or may not be immediately available.

In practical terms at the local level this will mean that the starter should talk to the Meet Referee before the meet starts to ensure both understand and agree on how these situations will be handled if they occur. If there is any doubt that the Meet Referee will always be immediately available, in the interest of preventing delays it may be expedient for the Meet Referee to give the starter authority to issue yellow card improper conduct warnings at the start line. If this does occur, the referee (all referees if there are more than one) should be informed as soon as possible that the starter has issued a yellow card improper conduct warning and to whom it was given. It really is not appropriate to also give the starter authority to issue red card disqualifications for improper conduct; that authority should only reside with the referee.

If the referee (or the starter) does issue a yellow card warning for improper conduct, the rest of the field should be shown a green card to indicate that no false start is being charged. It also should be noted that if an athlete is cited a second time for unsporting or improper conduct, even if in different rounds of an event or in different events, the athlete shall be disqualified from that event and any subsequent events. The relevant rule citations for this topic are: IAAF 145.2, 162.5.

Start Information System (Electronic Sensor Starting Blocks)

After several years of experimentation and development, the electronic sensor starting blocks to detect false starts are becoming more accepted and are becoming commonly used in major meets. These systems in the past have been called False Start Control Apparatus or False Start Detection Systems. The IAAF preferred terminology now is Start Information System (SIS), to emphasize that the apparatus is intended to provide information to the starter. If you ever have occasion to start a meet that utilizes this equipment, it is recommended that the headphones that signal the false start be given to a recall starter, and the starter only use headphones that have the microphone for the speakers on each set of starting blocks. During the starter’s command cycle there are a number of beeps that sound in the headphones, signaling various stages in the arming process for the sensor system, including a set of beeps after the “set” command. Many starters found it to be very disconcerting and confusing to

have all these sounds going off in their ears while trying to focus on the start of the race. Following discussions between starters and the equipment manufacturers, the systems are now set up so that it is possible for the starter to wear only a headset with the microphone, and a recall starter can be given the headset that is used for signaling a false start. The rules now allow a recall starter to wear the headset that carries the false start signal, and it is highly recommended that you request that this be the way the system is set up at the start line. However, this is an individual decision; some starters prefer to wear the headset that gives the signals. It also is permissible for both the starter and a recall starter to wear these headsets. IAAF rules now require that a recall signal through the speakers be an automated function of the SIS, if that option is available on the system being used. In other words, the athletes would hear the system's recall signal at the same time the starter and/or recall starter hears it in the headphones. This eliminates the need for the headphones on a recall starter in this situation.

Before continuing with a description of the output from electronic sensor blocks, it would be appropriate to provide a brief primer on how they work. There are three primary manufacturers of these systems that are most frequently used in track and field (in alphabetical order): FinishLynx (USA), Omega or Swiss Timing (Switzerland), and Seiko (Japan). The Omega and Seiko systems utilize custom built starting blocks with pressure sensors in the foot pedals, with slightly different approaches to measuring forces and analyzing the signals produced. The FinishLynx system instead uses an accelerometer to sense motion along the axis of the starting blocks, in a housing that can be attached to most any type of starting block. The accelerometer is attached to the central spine of the starting block assembly. There are no wires or connections to the foot pedals to sense pressure on the pedals in this system, as in the other two systems. When the athlete begins the explosive starting motion out of the blocks, the pressure put on the pedals will cause the whole block assembly to move backward slightly. This slight motion is what is sensed by the accelerometer in the FinishLynx system, whereas it is the pressure on the foot pedals that is sensed in the Omega and Seiko systems. When the rate of backward movement passes a certain threshold set in the computer software monitoring the accelerometer (or the amount of force or the rate of force increase on the pedals in the other systems), this is the indication that the athlete has begun the starting motion. The trick is in setting the right threshold, so that it indicates a true starting motion and not the small movements and foot adjustments that may take place while waiting for the gun to go off.

The other measurement the computer monitoring software tracks is the time from the sound of the gun until the threshold is passed. By rule, this lower limit is set at 0.10 second; any movement rate beyond the threshold that occurs before the 0.10 second time limit is presumed to be caused by an initiation of the starting motion before the gun went off. This limit was based on physiological data that indicated the normal human reaction time to sound is in the range of 0.14-0.16 second. Giving a "safety factor" of 0.04 second, it is assumed that it is physiologically impossible for a human to react faster to the sound of the gun than 0.10 second, and therefore any "reaction time" or "starting time" faster than that must be the result of the athlete anticipating the gun or trying to get an unfair advantage at the start. [Interestingly, there is research published recently in an IAAF research journal indicating this assumption may not be valid, so this issue may be revisited soon by the IAAF Technical Committee; see PV Komi, M Ishikawa and J Salmi. "IAAF Sprint Start Research Project: Is the 100 ms limit still valid?" *New Studies in Athletics* 24(1):37-47 (2009).]

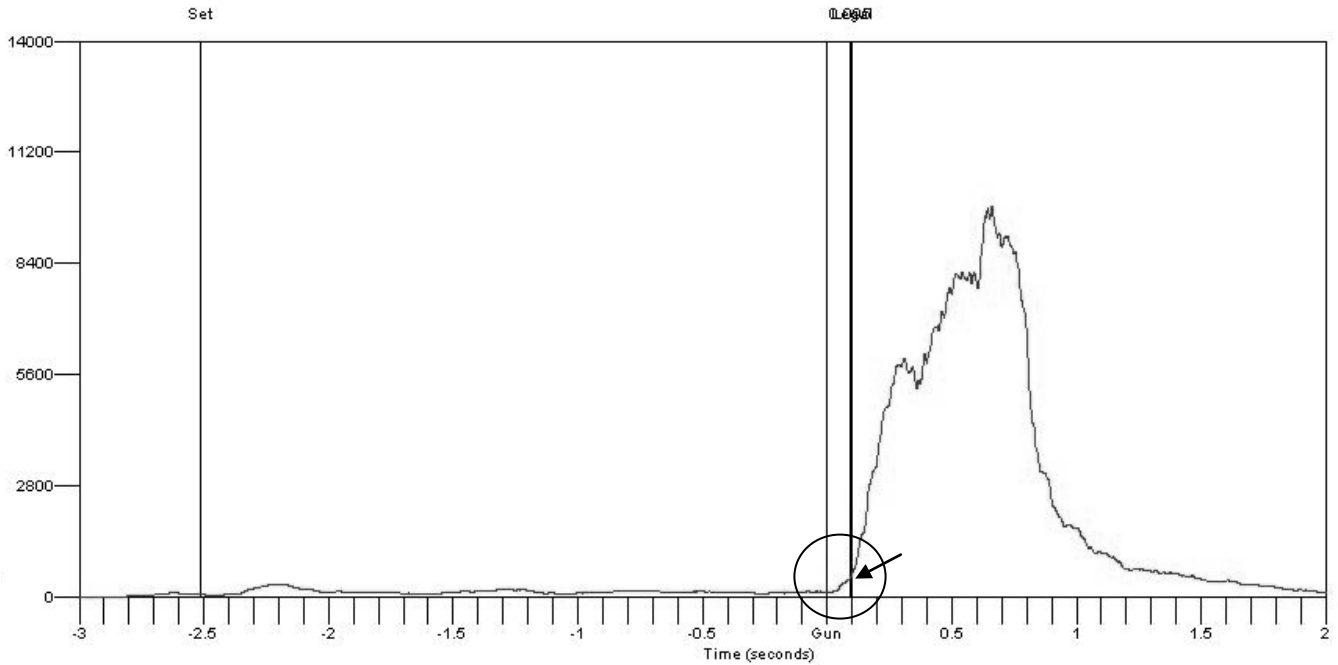
If you have occasion to work at a meet using SIS sensor blocks, there are additional things you need to be aware of with regard to their use. When the equipment indicates a false start has occurred, you should always check with your recall starters first, to come to agreement on what everyone saw, *before* checking the results from the equipment. In most cases there should be agreement between what you saw and what the equipment indicates. If there is disagreement, it is likely one of two possible

situations. First, the sensors have picked up a starting motion that was just inside the 0.10 second limit and therefore difficult to pick up visually; or second, there could have been an error on the part of the equipment. This latter possibility is admittedly rare, but it is not unheard of. Until the 2006 season, IAAF rules assumed that the sensor equipment never made errors, and therefore there was no recourse if the equipment indicated a false start. The starter or the referee had no choice; the athlete(s) had to be charged. Fortunately, this lack of recourse now has been corrected beginning with the 2006 season, and the referee can over-ride the results of the sensor equipment if it is apparent that there has been a malfunction.

As a starter, you should be aware that there is more information available to you from the SIS than just the printout of “reaction times” in each lane that are immediately presented to you. You also should be aware that the technical staff handling the equipment generally is instructed not to provide information unless asked for it. Sometimes this additional information can be critical, especially in situations where there is a discrepancy between what you and your crew saw and what the machine appears to be telling you. As an example, such a situation arose in the preliminary rounds of the men’s 100M at the 2005 USA outdoor championship meet. After an initial false start (when the old “one to the field” rule was in effect), the next start was again recalled when the equipment indicated a false start. The starter crew all agreed they saw movement just prior to the gun in lane 5 only. The sensor equipment printout of reaction times indicated that the false start occurred in lane 4. The printout indicated lane 4’s time was 0.095 second, and lane 5 was 0.205 second. At that point, appearing to have no other options, the starter disqualified lane 4.

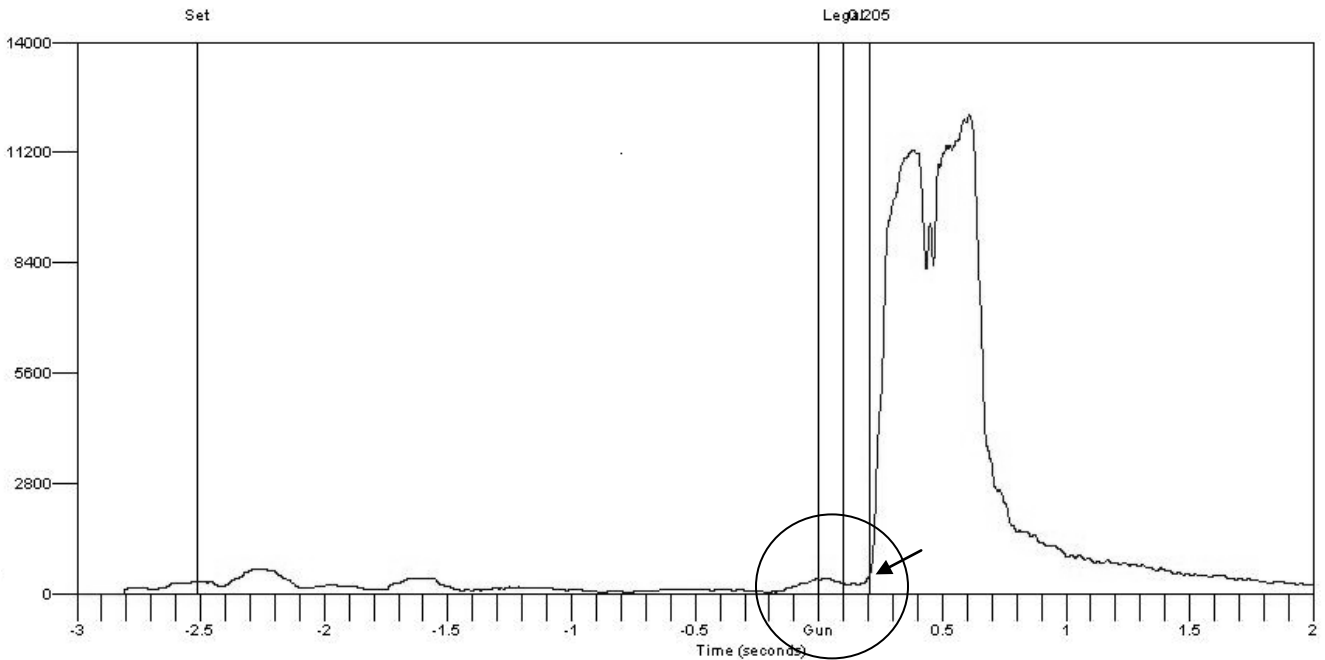
Later, the waveforms were reviewed, and they showed a different story. These waveforms are reproduced in Figures 10-12 (courtesy of FinishLynx). Figure 10 on the next page shows the summary waveforms for all lanes; lane 1 is at the top, lane 9 at the bottom. This also shows movement before the 0.10 second limit in lane 4 (circle). (In this diagram the left-most of the two closely spaced vertical lines indicates the instant when the gun went off, and the right vertical line indicates the 0.10 second reaction time limit; each hashmark along the bottom axis represents 0.1 second.) But notice there also was a shallow rise in the line prior to the gun for lane 5 (arrow), although apparently it did not rise to the level that it set off the sensors.

Figure 11: Expanded waveform for lane 4



[Courtesy of FinishLynx]

Figure 12: Expanded waveform for lane 5



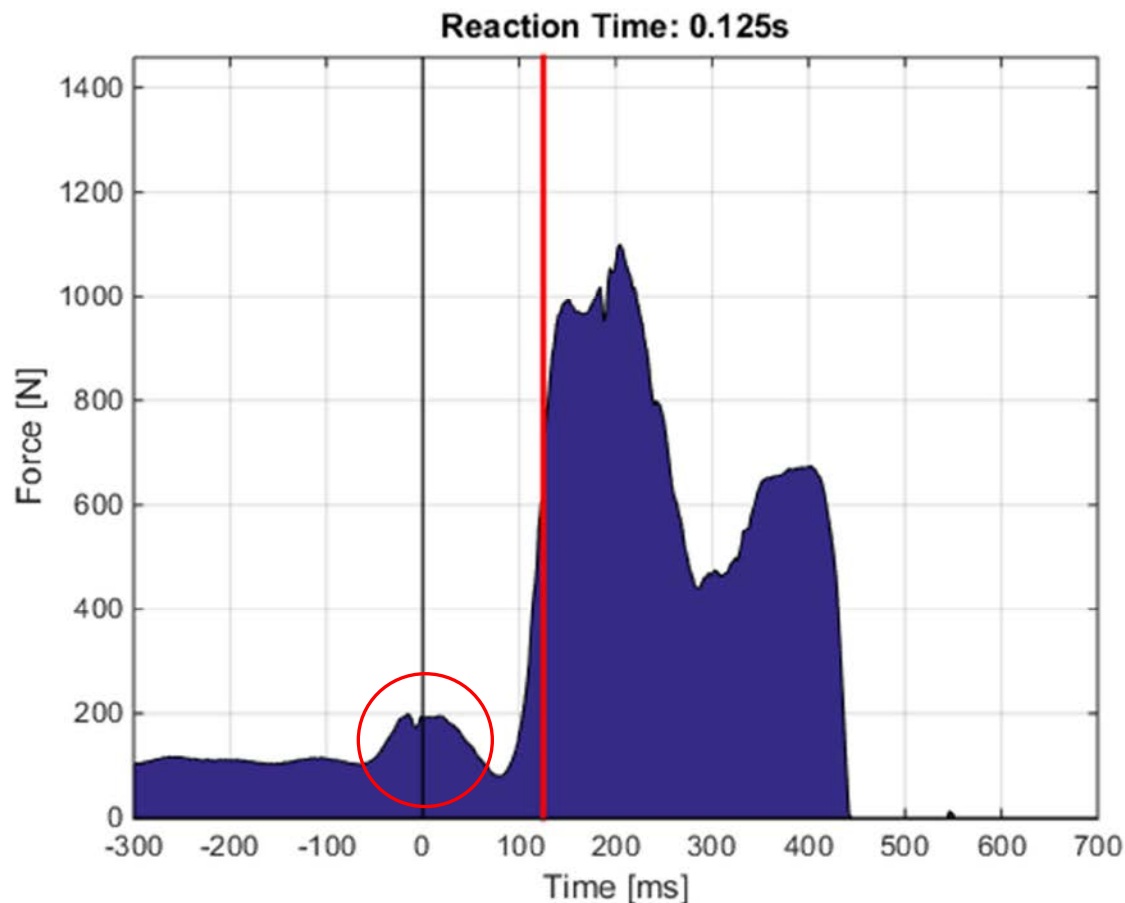
[Courtesy of FinishLynx]

Now with this additional information, it is possible to see that what the starters saw (movement in lane 5 before the gun) actually did occur, and this “buck” or “flinch” was of sufficient magnitude that it likely drew lane 4 next to him into a false start. (Note that the movement in lane 4 does not begin until about 0.19 second after the movement in lane 5, which is a typical reaction time to a visual stimulus. Note also that lane 5 was shutting down his start movement just as the gun went off, and could not recover and react until over 0.20 second after the gun, again typical of what happens with a “buck” or “flinch” just before the gun.)

All of this is not apparent from the first level of information available, the printed “reaction times” for each lane, nor from the second level of information available, the summary waveforms for all lanes. The third level of information is necessary, the blowups of the waveforms for each individual lane. The lessons here are to always ask for as much information as possible in these situations, and to realize that it will not necessarily be provided unless you ask for it.

Figure 13 shows an additional example of what a “flinch” or “buck” looks like, this time from the Swiss Timing system. Here it is evident that there was some movement prior to the gun, as shown by the “bump” in the curve that is circled, but it wasn’t sufficient to trigger the system.

Figure 13: Example of waveform of a “flinch” or “buck”

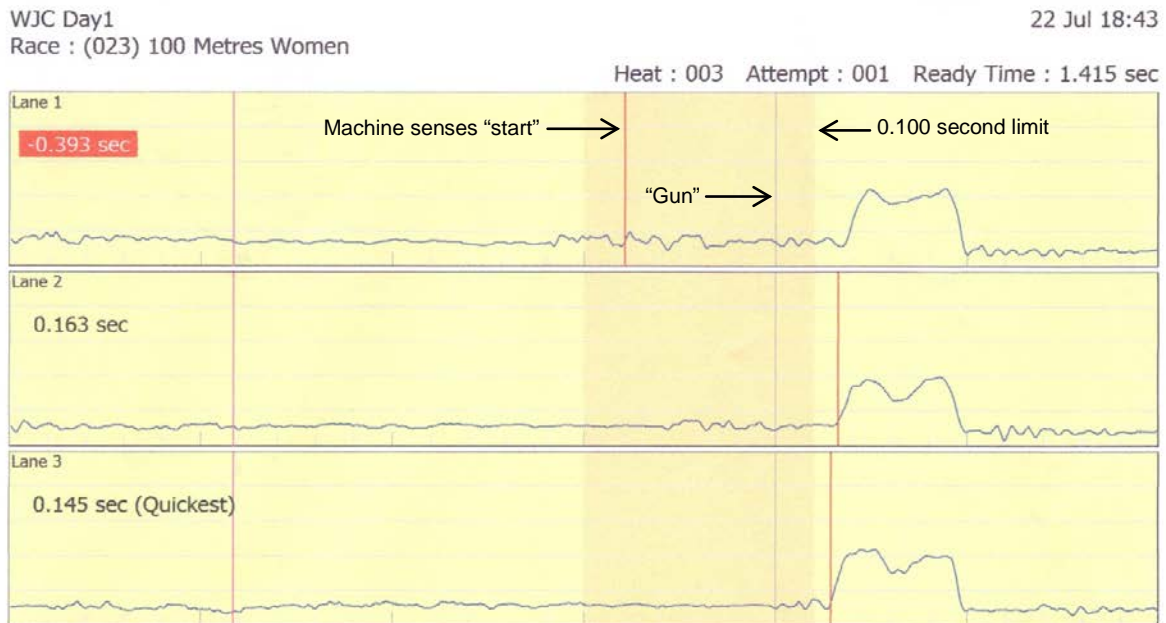


[Courtesy of Swiss Timing]

Another example, illustrating a situation that was not what it initially seemed, is shown in Figure 14. The SIS readout indicates that lane 1 false started 0.393 seconds before the gun was fired and it sounded the signal to recall the race. It is immediately apparent that the athlete did not begin her actual start until approximately 0.2 seconds after the gun, when the curve rises steeply to the initial peak. It appears there was some foot movement at the end of the athlete’s rise to the set position that put just enough pressure on the block pedals to trigger the system. In this instance, review of the official meet video from cameras located behind and from the side of the starting line showed no visible movement on the part of the athlete until after the gun and at the same time as the rest of the field. If this truly had been a false start, the steep curve to the initial peak would have been within the lightly shaded area, between the line indicating the firing of the gun and the edge of the shaded area to the right that

indicates the 0.100 second limit, or it would have been in the shaded area to the left of the line indicating the gun being fired.

Figure 14: A false start indication that is false



[Courtesy of Seiko]

If you ever have occasion to use an SIS, these are the kinds of things you need to look for and be aware of. The equipment is there for the starter to be able to “examine the reaction times from the Start Information System in order to confirm which, if any, athlete(s) is/are responsible for the recall.” The key word is “confirm”. In other words, it is a tool to verify what the starter and recall starters observed visually. In most cases there will be no discrepancy; but, when there is, all the information available should be utilized to come to a final decision. And starters and recall starters should never get in the habit of relaxing their vigilance just because the false start detection equipment is being used; the human eye is still the primary tool.

IAAF Start Coordinator (Chief Starter)

The IAAF has created a position called Start Coordinator, in addition to the Starter and Recall Starters. The Start Coordinator essentially is what in the past has been called the Head Starter, or Chief Starter. The responsibilities of this individual include 1) allocating duty assignments to the Starters and Recall Starters (e.g., assigning who will start each race); 2) supervise the duties performed by all members of the starter crew; 3) inform the Starter when all is ready for each race to start; 4) act as the intermediary between the starter crew and the technical staff operating the timing equipment and false start sensor blocks; and 5) keep all papers produced during the start (i.e., printouts from the Start Information System) until turned in to the Competition Secretary. The IAAF also stipulates that this individual will oversee the proper administration of the false start rule, including overseeing proper notification of the athletes (normally by the starter’s assistants) by red/black or yellow/black cards, or a green card if no one is being charged.

These are all duties that previously were done by the “Head Starter” or senior member of the starter crew, and the intent of the IAAF is that this will continue to be the case, but with a new title. However, the rule does allow for two approaches in the way it is applied; the Start Coordinator can be a purely administrative position for a senior starter who does not start races, or the Start Coordinator can continue to start races during the meet. Either option is acceptable. This newly defined position likely will not result in any change in practices at the local level (i.e., the “Head Starter” / “Chief Starter” / “Start Coordinator” will continue to assume these responsibilities while also starting races).

Zero Test

If you ever work as a starter at a national championship, or any meet where there is the potential for a national or world record to be set, you need to be aware of the need for a “zero test” or “zero gun test”. This is a test to confirm that the overall delay between the report from the starting pistol (or the initial sound of the tone of an electronic gun) and the start of the timing system is equal to or less than 0.001 second. This test must be done each day of the competition, usually 30-60 minutes before the first scheduled running event of the day. It is performed by the chief starter (or a designated starter) and members of the technical staff of the timing system, and observed by the start referee and/or the track referee. If a record is set, the results of the zero test must be submitted with the record application.

The zero test is performed by placing the starter pistol on the finish line in one of the middle lanes so the flash of the gun (or the strobe light on an electronic gun) will coincide with the true finish line (the edge of the finish line closest to the approaching runners; see Figure 15). It is a good idea to place a piece of plastic or cardboard on the track surface under the pistol so the flash does not leave a powder burn on the track. The gun sensors are placed on the ground approximately the same distance from the pistol as they normally are during actual starts, but no further than 30 cm from the pistol. When the camera crew indicates the cameras are ready, the gun is fired. The initiation of the flash is read with the hairline cursor on the resulting image, just as a torso crossing the finish line is read, and the resulting time reading on each camera should be zero, or no more than 0.001 second. See Figures 15 and 16 for examples of the resulting camera picture. If the reading is not within this limit, the timing crew will have to make adjustments and the test repeated. A printout of the resulting picture should be viewed by the chief starter and/or the start referee/track referee. The electronic record of the zero test result should be retained by the timing crew, and a printout of the picture should be submitted to the competition secretary, who will need to include it as part of the paperwork filed for any record application that might result from performances during the competition.

Figure 15: Set-up of Zero Gun Test and example result

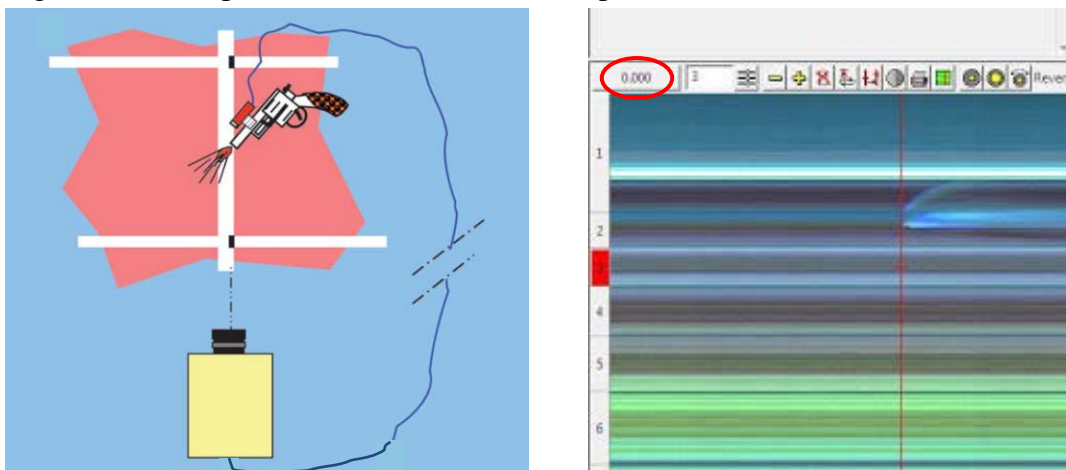
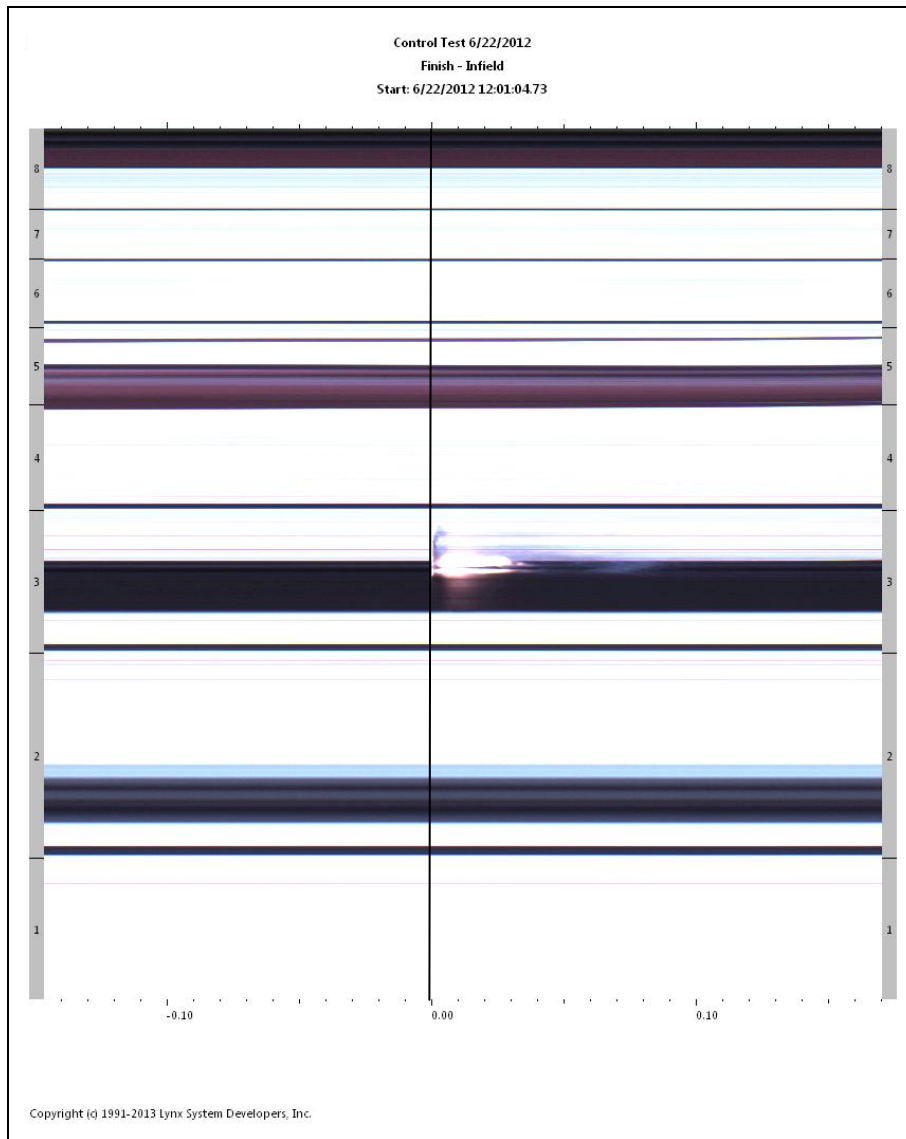


Figure 16: Example of Zero Gun Test result



Honest Effort

On rare occasions an athlete may intentionally false start in order to be disqualified (usually because the athlete has been entered in the race and must show up, but the athlete or the coach has decided to try to “save” the athlete for a later event). The starter may eventually be asked by the meet referee to make a determination whether the athlete made an honest effort or intentionally jumped. At times this may be a subjective judgment on the part of the starter or the recall starter; at other times it may be quite obvious. Generally, the starter will not pursue the referee to report such incidents, but must be prepared to report what was observed, if asked.

Rotating Starters

If more than one head starter is used during a meet with preliminary and final rounds, it is generally advisable to assign the same starter to the same event throughout the preliminary and final rounds. Because of differences in voice and rhythm between starters, this is fairest to the athletes.

Starters' Uniform

As with other officials, the uniform worn by the starters is determined by meet management. You wear whatever uniform meet management provides or stipulates. In the absence of any required uniform from meet management, the start team should wear whatever standard uniform is used by the local or national governing body.

Ear Protection

It is highly recommended that the starter protect the ears from the sound of the gun blast. Race after race, meet after meet, year after year, firing the starting gun will take its toll on the auditory nerves of the ear, eventually creating hearing loss, starting in the high frequency range. Good earplugs are highly recommended, rather than cotton or inexpensive earplugs. They should be used in both ears, not just the ear closest to the gun. A good earplug should be comfortable in the ear and allow hearing normal conversation. They should not block out all sound, since it is important that the starter be able to hear noises that may distract the athletes during the start. Some starters use the earmuff or headphone type of ear protection often seen on target ranges. This is a reasonable alternative, as long as the individual does not have to wear radio headphones for communication purposes during the meet. When wearing radio headphones, earplugs still should be worn, since radio headphones are not designed to give sufficient noise protection to the ears.

Another means of long-term protection of hearing for the starter is to use an open barrel pistol, if it is possible to do so in the local country. Much of the noise will be directed straight upward with an open barrel pistol, rather than to the side (and toward the starter's ears) as with a closed barrel starter pistol. Tests have shown that the decibel level at the head with an open barrel pistol is significantly lower than with a closed barrel pistol. However, with an open barrel pistol, you will have to go through the process of getting a weapons permit from the appropriate local law enforcement office.

An alternative is one of the new electronic starting pistols recently coming on the market. The manufacturers have not yet been able to reproduce the sharp, intense sound and impact of the blast from a black powder cartridge, and there have been reports of athletes not reacting as well to the electronic guns, while others have reported no problems adapting. In some cases an electronic "beep" is used, similar to the swimming start signal, instead of an imitation pistol shot. However, some have questioned whether this has as much impact outdoors as it does indoors in a swimming pool. But improvements are being made to the electronic tones, and the prices of these electronic starting pistols have been dropping, and it is entirely possible that in the not too distant future the traditional starter pistol with black powder shells will be a thing of the past, and we will all be using electronic pistols. (Having a "silent gun" with an electronic start signal going to speakers in each starting block, rather than through the air from a regular pistol, is seen as fairer for the athletes, particularly in staggered starts. See: A.L. Julin and J. Dapena "Sprinters at the 1996 Olympic Games in Atlanta did not hear the starter's gun through the loudspeakers on the starting blocks" in the IAAF research journal *New*

Studies in Athletics 18(1):23-27 (2003), and J. Dapena “Technology Problems in the Olympic Track Start: When the Winner Does Not Necessarily Win” at <http://www.cidida.org/files/documents/ponencias/Jes%C3%BAs%20Dapena.pdf>.)

Moving Equipment

Often the starter is not only in charge of starting races, but must be responsible for moving the starting blocks from one start line to another, helping move and set up hurdles, and helping the clerk. This is particularly true in smaller local meets. It is recommended that the starter try to avoid being given the responsibility of also being the meet referee, although this is a common practice in some areas. The starter usually has enough to do without delaying the meet to go make decisions on other events. Still, these are all part of the job. However, at higher levels of competition and as the meets get larger, these extra jobs should and will be assumed by other individuals.

Care of the Starter Pistol

A good starter pistol should last a lifetime if properly cared for. It should be thoroughly cleaned as soon as possible after each use, using the materials and instructions found in a good commercially available gun cleaning kit. This eliminates the build-up of gunpowder, carbon and other materials that can lead to gumming up or freezing the mechanisms of the pistol. It is especially important to clean the gun after a meet where it has rained. Rust is another primary enemy that can ruin a pistol. The proper and consistent use of a good gun oil and cleaning kit will help prolong the life of a starter pistol and help maintain its reliability. (This is another concern/task that will disappear as electronic starting pistols come into more common use, along with the necessity and expense of buying blank shells.)

Safety

Safety precautions are not something starters are usually as concerned about, compared with other officials such as those doing the throwing events. However, the starter must still be aware of things like looking to make sure a runner is not headed on a collision course when stepping onto the track. Better yet, develop the habit of crossing the track behind the starting blocks when sprinters and hurdlers are warming up. When helping to set hurdles on the track, always check in both directions before moving anywhere after setting a hurdle. There always is the risk of a hurdler taking a practice run in the lane next to you. If you must be on the track for any reason, try to stand on a lane line to reduce the risk of a full on impact by an athlete taking a practice start. If the location of a start line requires the starter to be near an area where errant throwing implements could land, try to ensure there is a marshal or someone else in the area to act as an extra pair of eyes and warn the starter crew if necessary.

Another safety concern to keep in mind is sun protection. While caps have been the common outdoor headgear for starters, it would be wise to consider the use of a wide brimmed hat to help protect the face, neck and ears from the many hours of direct sun that starters often are subjected to during outdoor meets. Along with liberal use of a high SPF sun block on all parts of the head, neck, arms and hands, this will help protect you from the long-term consequences of sun exposure.

A couple of other good habits to adopt, particularly if you use an open barrel pistol, deal with protecting your pistol from being “lifted” from your possession. Wear your pistol in a holster with the handle forward. This makes it more difficult for someone to take it out of the holster from behind you. When you are temporarily leaving the track area and going into areas with spectators, etc., leave your pistol with someone else on the starter team. This procedure is probably more important in larger meets occurring in a stadium with larger crowds.

Traveling with Your Starter Pistol

When traveling to and from meets, it goes without saying that your starter pistol, even if it is a closed barrel pistol, should be kept (unloaded!) in a case and locked in your car trunk (not in the glove box or the console). If your vehicle does not have a trunk, you will need to carry your pistol in a hard case that is locked. It can lead to some touchy situations if you happen to be stopped by the police with a pistol lying on your car seat or in a holster on your belt. If you have an open barrel pistol, make sure you have your carry permit with you if you live in an area that requires them. Laws on carrying firearms vary from country to country, and many countries’ laws are more restrictive than others. Check with your local law enforcement office for the exact requirements in your area.

If you have occasion to travel by air with your starter pistol, it must be unloaded and in a locked, hard case in your checked baggage; you cannot have it in carry-on baggage. When you check in for your flight, you must declare orally (or in writing) that you are carrying the pistol, even if it is a closed barrel pistol, and ask the ticket agent for a gun tag to fill out and put with your gun case in your suitcase. If you forget to declare the pistol in your bag and it is seen without the expected tag when the bag is X-rayed, you could find yourself being unceremoniously escorted from the plane. Even though it is legal to carry black powder blanks with your pistol in your checked baggage (but not bulk black powder or percussion caps), it is probably best to travel without your blank shells. In some jurisdictions blank shells are, or may be, considered to be ammunition, the rationale being that the wadding in a blank shell can inflict harm. If you do take blanks with you, you must carry them in a suitable container meant for carrying small amounts of ammunition (e.g., the manufacturer’s packaging). Some airlines will allow you to carry them in the same bag as your gun case, others do not. It probably creates fewer problems to carry them in a separate checked bag if possible.

To help “educate” any airline personnel who may be unfamiliar with the situation regarding starter pistols, it is a good idea to carry with you a copy of the government regulations regarding transporting a gun on an airline flight and/or a copy of the specific airline's regulations. You can get information on any specific requirements of your air carrier by contacting the airline or going to its website prior to your flight, if you have not flown previously with that airline.

Whenever traveling by air or driving, it would be a wise precaution to carry your officials identification card with you, along with copies of any selection letters or e-mails noting your status as a starter. Copies of these documents also should be placed with your gun case in your checked baggage when you are flying. If you do run into any problems, remember to remain calm, and ask to speak to a supervisor. Maintaining a calm, professional demeanor will help avoid further delays.

In Conclusion

Being a starter or a recall starter is a major responsibility in a track meet, and you can have a positive or a negative impact on the satisfaction and enjoyment an athlete will have in participating in the sport, depending on how well you do your job. This monograph has attempted to present information on the major aspects of the mechanics and techniques of being a good starter. Practice the skills discussed here, observe other starters, take the time to practice voice commands and use a stopwatch to time your holds, stand in front of a mirror to observe your body language and arm signals. These will help with your mechanics. However, it still boils down to knowing the rules and using common sense in applying them. Again, all your actions and decisions should be focused on the good of all the athletes, the basic principle being to ensure that no athlete gains an unfair advantage over the other competitors, and no athlete has to compete under an unfair disadvantage.

- About the Author -

Eric D. Zemper, PhD, FACSM

Dr. Zemper has been involved with the sport of athletics, or track and field, for nearly 60 years as an athlete, coach and official. He has been an official for nearly 50 years, and a Master level official in the USA since 1981. Soon after becoming an official he became a starter, and that has been his primary role as an official for over four decades, fifteen of them on the starter crew at Hayward Field in Eugene, Oregon. He has been a starter or chief starter for over two dozen US national championships at the youth, university, open and Masters levels, and has been on the starter crew for 29 IAAF Grand Prix/Diamond League competitions. Dr. Zemper has for many years been an instructor for training clinics for athletics officials and for starters. In 1999 he became an IAAF Area Technical Official, and in 2006 he became an IAAF International Technical Official. He also is an International Technical Official for the International Paralympic Committee, and edits the section of rules for athletes with disabilities in the USA Track & Field rule book. He was selected to work as a track official for both the 1984 and 1996 Olympic Games, has worked as an ITO at world indoor and outdoor championships, and was appointed to the ITO crew for the 2012 Olympic Games in London. Recently he was one of nine international starters invited to be on a panel to create the USA Track & Field *Starters Case Book*. Dr. Zemper is the Director of Research and a medical educator for the Statewide Campus System of the College of Osteopathic Medicine at Michigan State University.

STARTERS EQUIPMENT – “What's in the bag?”

The following is a list of suggested equipment for starters (carried in an athletic bag):

.32 caliber pistol (a .22 caliber pistol may be used for indoor meets)
Sufficient blank shells to start all races in the meet (generally try to ensure the meet management supplies shells, but keep some in your bag just in case they are needed)
Gun cleaning kit. Care should always be taken to clean the gun immediately following a meet.
Metal whistle on a lanyard (keep a spare handy)
A set of appropriate diagonally-halved red, diagonally-halved yellow, and solid green cards; A5 size recommended (21 cm x 14.8 cm or 8. inches x 5.8 inches)
Complete set of raingear, plus goulashes
Bottle of sun block
Sunglasses
Earplugs (and a spare set) or “ earmuff ” ear protection
Bright fluorescent arm sleeve
Comfortable shoes
Hat (generally white, preferably wide brimmed)
Small plastic bags (handy for keeping your gun dry during wet weather)
Extra baton
Current rule books
Pencil and paper or index cards
Safety pins
Extra black powder shells
Hand towel
Piece of sidewalk chalk in a baggie (to mark a 3 meter walk-up line on tracks that do not have these marked for distance races)
Extra track spikes and spike wrench
Tape
Small knife and/or scissors
Watch and/or stopwatch
Hand-held loudspeaker or speaker system, with spare batteries
Clean handkerchief and clean saline solution for contact lenses

CHECKLIST FOR STARTERS

The following are checklists for head starters and recall starters covering their major responsibilities:

Head Starter

- ___ Arrive an hour before the meet is to start and report to the Referee or Meet Director.
- ___ Look over the facility - study the color codes for the start lines; 1-turn, 2-turn and 3-turn staggers; break points, etc.
- ___ Anticipate problems - improper markings, no batons, lap counters, starting blocks, etc.
- ___ Obtain time schedule from Meet Director or Clerk of Course.
- ___ Synchronize watch with Meet Director and/or Head Timer.
- ___ Discuss hand and arm signals to be used with finish line personnel and announcer.
- ___ Check for obstructions between starter's positions and timers.
- ___ From the 200 M start, is the background too light so that the timers cannot see the smoke? (May need to adjust the starter's position.)
- ___ Check blocks and hurdles. Are they correct? Does the start crew have to move them, or are there helpers?
- ___ If a sound system is to be used for staggered starts, check to make sure all speakers are working and it can be heard easily from each lane.
- ___ Establish starter and recall starter positions for straight and staggered races.
- ___ Determine how the "all clear" will be received from each exchange zone before the start of the 4x100 relay.
- ___ If a photo timer is being used, check out the system with the operator (i.e., check that the sensor is operating correctly at each start line).
- ___ Discuss duties and responsibilities with the recall starter(s) and starter's assistants.
- ___ Pick up shells from host coach. Always check to make sure the shells are black powder, not smokeless.
- ___ Do not discard used shells in the track area. Keep them on your person until you can properly dispose of them.
- ___ If using headphones to communicate with the finish line and photo timer, check to make sure they are operating correctly.

Recall Starter

- ___ Arrive early with the head starter before the meet.
- ___ Look over the facility and study the color codes for the start lines, etc.
- ___ Discuss with the head starter the conduct and signals to be used during the meet.
- ___ Obtain the time schedule for the meet.
- ___ Identify the positions the head starter wishes the recall starters to use.
- ___ Assist at the start line with starting blocks, answering questions, checking equipment such as batons, numbers, etc.
- ___ During the start of a race, never have finger on the trigger and never have the gun cocked.
- ___ For sprint races, when runners are in their blocks, quickly check hands and see if there are any problems. If you spot a problem, quickly notify the starter to call the runners up.
- ___ For distance races, if you are on the line, quickly check to see that toes are behind the line. Call the runners up and reset them if there is a problem.
- ___ Be especially alert for such things as outside noises that could cause a break at the “set” command, or for blocks slipping or a stumble on the first stride.
- ___ On a staggered start, whether in the front or the back, use an appropriate signal to the starter when “all is ready,” or notify him if there is a problem.
- ___ If a photo timer is being used, help moving the cables.
- ___ Have either a .22 or a .32 caliber pistol available for recalling.
- ___ Establish whether or not the recall starter is responsible for firing a gun or ringing a bell to signal the “gun lap” on distance races.

APPENDIX B

Comments on starter placement with use of a live gun versus a silent gun on staggered starts

It appears there are a couple of fundamental philosophical differences among starters in Europe and in North America (and in some cases meet managers or technical delegates who oversee starter crews) regarding how to place the starter for races that involve echelon or staggered starts. The first involves the amount of emphasis on each of the two primary criteria for placement of starters noted in the text of this monograph (i.e., visual control of the field of athletes, and equidistant placement of the starter for a relatively equal amount of time for the sound of the gun to reach the athletes in the inner and outer lanes). Those who promote the “behind the line” position apparently put much more emphasis on the “visual control” criterion and little or no emphasis on the fairness issue with regard to the sound-carry criterion. Those who promote the “centered” position for equal sound carry emphasize equally the fairness criterion and the visual control criterion by the starter, placing trust in the recall starters to help handle the latter issue.

If a silent gun is used (i.e., an electronic gun with the sound sent only through loudspeakers placed close to the athletes, either through speakers mounted on each set of starting blocks or through a series of speakers located along the side of the track), then either the behind the line position or the centered position is fair and acceptable. If a live gun is used (firing black powder shells, and the primary report travelling through the air), it would seem the rational, fairest choice is the centered position, and let the recall starters help handle the visual control. That way, both criteria are met, whereas with the behind the line position only the visual control criterion is met and the fairness of sound-carry criterion definitely is not.

Which brings us to the second philosophical difference. The insistence that the starter must have full visual control over the entire field carries with it the implication, recognized or not, that the recall starters cannot be completely trusted to spot a false start. This seems to be a carry-over from the days when it was the philosophy that the starter must have absolute control over everything at the start line, which probably was the result of the fact that a century ago there were no recall starters. These days we prefer a more modern approach to these issues, with the point of view that the starter crew functions as a team of equals under control of the starter, and the starter is able to trust the recall starters to do their job. There is no absolute need that the visual control criterion be met by the starter alone; it can reasonably be met by the starter crew as a whole.

The behind the line placement normally is justified by those who use it with a live gun by the claim that all athletes, no matter how far away from the starter they may be, will hear and react to the gun through the loudspeakers placed either beside the track or on the back of the starting blocks. This would be reasonable if this assumption were true; but it is not. As shown by several published research studies, among them research published in the IAAF research journal, *New Studies in Athletics*, athletes do not react to the sound through the speakers when a live gun is used; they react to the sound through the air [see, for example, A.L. Julin and J. Dapena “Sprinters at the 1996 Olympic Games in Atlanta did not hear the starter's gun through the loudspeakers on the starting blocks” *New Studies in Athletics* 18(1):23-27 (2003)]. So those who are in the outer lanes for a 400M start are hearing the gun through the air and, as consistently shown by research on this issue, are reacting up to 0.2 seconds later than those in the inner lanes closest to the starter positioned behind the start line. It should be obvious that this is unfair to those in the outer lanes, and breaks the cardinal rule for starters that every athlete be given a fair start. For a more detailed discussion of this issue, see J.R. Young, “One, Two, Three, Go!” Ottawa: Athletics Canada (2001) pp. 70-82.

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