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Title

Tactical behaviors in men's and women's middle-distance global championship track finals.

Abstract

Purpose: To analyze tactical behaviors associated with performance in track middle-distance global championship finals. **Methods:** Finalists' season-best (SB), finishing race time (RT), 100m section times, and intermediate positions were obtained from 800-m and 1500-m men's and women's finals in two Olympic Games and five World Championships. Differences between medalists (M), fourth to eighth (T8), and ninth to $12^{th}/13^{th}$ (T12) ranked finalists in relative performance (relative to SB), RT and section times were determined. Pearson correlations between intermediate position and section speed with final position, and probability of winning a medal at each race point were calculated. **Results:** A very high correlation was found between intermediate and final position at first 100m in the women's 800-m ($r = 0.84$; $p = 0.008$), which was maintained throughout the race. M were relatively faster than T8 in men's and women's 800-m finals ($p = 0.006$; $d = 0.87$, and $p = 0.039$; $d = 0.59$, respectively). Differences in relative performance between groups in 1500-m finals appeared at the end of the race, although they arose earlier in women's races. Probability of winning a medal decreased with lower intermediate positions, especially in the latest race stages. **Conclusions:** A high intermediate position as well as the ability to run fast in the latest race stages seem critical to medaling in track middle-distance global championship finals. The abilities to adopt leading positions for the whole 800-m event, and to generate an endspurt, relatively faster than the rest of competitors, in the 1500-m event, are critical.

Keywords: Athletics, tactics, pacing, position, performance.

Introduction

The middle-distance running track events (800-m and 1500-m) at global championships require both a pre-race plan and continuous decision-making regarding the regulation and distribution of energy throughout the race.[1] Athletes plan their strategy before the race depending on the quality and history of their main competitors, and the round of the championship (i.e., heats, semifinals or final). During the event they have to take into account internal (i.e., homeostatic disturbances),[2] and external conditions (behavior of

their rivals),[3] to modify their tactical approach with the aim of optimizing their performance (i.e., finishing position), which may not necessarily involve winning, but finishing in the best possible position.[2]

The presence of rivals affects athletes' decision-making during 800-m and 1500-m races, which are the shortest track events in which athletes are not confined to their own lanes (except for the first 100m in the 800-m), thereby complicating the critical tactical challenges. Several studies examining tactical and pacing behavior in middle-distance running races have been conducted with the aim of assisting runners and their coaches to optimize competitive outcome. For instance, athletes should consider the influence on performance of running wide on the bends (i.e., covering a greater distance), versus avoiding getting blocked or tripped by other competitors.[4,5] Moreover, the effect of drafting, which causes a reduction in the aerodynamic resistance, is achieved by running just behind other athletes, and can lead to a considerable reduction in the energy cost, which is proportional to the runner's speed,[6] while improving performance.[7]

Furthermore, important differences in pacing and tactical behaviors were found between championship races, in which the aim is to achieve the highest final position, and 'meet' type of races, in which the goal is to finish as fast as possible.[8,9] Therefore, race time (RT) is generally longer in championship races,[9,10,11] also caused by the greater pace variability[9,12] and the fatigue generated in qualification rounds.[13]

In both 800-m and 1500-m major championship finals, medalists are able to maintain a fast speed over the final race stages.[14] Furthermore, successful championships' women's distance runners (those who advance to the next round, or achieve a podium) typically break clear of unsuccessful runners (those who are eliminated at qualification rounds, or who do not achieve a podium) earlier in the race when compared to men.[14,] However, no differences have been found in performance relative to season best time (SB) between successful and unsuccessful athletes in global championship middle-distance heats and semifinals,[15,16] although athletes who qualify as 'fastest losers' do so with a more high risk strategy, characterized by a higher relative speed in the early stages of the race than the rest of competitors.[17]

Additionally, high correlations were found between intermediate position (at different points of the race) and final position in middle-distance global championship qualification rounds, which increase as the end of the race approaches.[16] In this regard, men's 1500-m

Olympic gold medalists usually run near the front of the race, and their position improves as the race progresses.[11] In the case of 800-m races, a previous study determined how dispersion between runners plays a critical role in achieving a top-3 finishing position, especially that observed during the second lap.[18] Furthermore, the concept of 'ROSPT' (rank order section time) has been proposed, referring to a performance order of the athletes over particular race sections. For example, an athlete being ROSPT 1 would have been the fastest over that particular race section, the second fastest would have been ROSPT 2, and so on.[17] ROSPT showed a stronger correlation with final position than intermediate positions, especially in the last lap of global championship 800-m and 1500-m qualification rounds.[17] Although the concept of "losing contact" or "falling behind" is more usually thought of in relation to longer events, the reality is that many of the late finishers in 800-m and 1500-m events are always near the rear of the pack, effectively having a low ROSPT throughout the race.[19] In addition, the probability of qualification for the next round in a global championship increased with a better intermediate position[16,17] and with a lower ROSPT.[17] To the best of our knowledge, previous studies have not conducted intermediate positioning analyses in middle-distance global championship finals nor analyzed race sections as short as 100m. Therefore, the aims of this research were: a) to determine performance differences between medalist and non-medalists in global championship middle-distance finals; b) to assess the relationship between intermediate positions and ROSPT with final positions; and c) to calculate the probability of success (winning a medal) for each intermediate position and ROSPT.

Results of the present study may lead to a better understanding of the race planning and decision-making process underpinning tactical behaviors of the athletes in 800-m and 1500-m global championship finals, and to generate a deeper knowledge of tactical demands to win an international medal.

Methods

Subjects. Official electronic 100m section times in men's and women's 800-m and 1500-m finals from two Olympic Games (OG; Rio 2016, and Tokyo 2020) and five World Championships (WC; Moscow 2013, London 2017, Doha 2019, Oregon 2022, and Budapest 2023) were obtained from the publicly available World Athletics website (https://worldathletics.org/) and other published documents.[20,21] 800-m finals of 2016 OG and 1500-m finals of 2023 WC were excluded from the analysis due to lack of some publicly available section times, and errors in some athletes' section times, respectively.

Other global championships from a similar timeframe were excluded due to the absence of 100-m section data (e.g., London 2012 OG, Beijing 2015 WC and Paris 2024 OG). The total number of athletes was 241, who were divided into medalists (M, n = 18 [per event]), fourth to eighth (T8, n = 29 in both men's and women's 800-m finals and 30 in both men's and women's 1500-m finals), and ninth to $12^{th}/13^{th}$ (T12, n = 26 in men's 1500-m finals and 25 in women's 1500-m finals) ranked finalists.

Design and methodology. An observational approach was adopted. For each athlete, the average final race (S_F) and SB (S_{SB}) speeds were obtained (speed = distance/time). Subsequently, relative performance to athletes' SB ($[S_F/S_{SB}]*100$) was calculated. Relative 100m section speed to that of SB was calculated for each athlete ($[S_{Section}/S_{SB}]*100$).

ROSPT was calculated for each athlete and 100m section time.[17] Average intermediate position and ROSPT were calculated at each race point for each available position (8-9 positions in the 800-m, and 12-13 in the 1500-m).

Probability of winning a medal was calculated for each intermediate position and ROSPT, as the number of runners who achieved a medal divided by the number of runners who were at each available position or recorded each available ROSPT, at each intermediate point. So, in the case that, for instance, six runners were in third position at the 600m point of the 800-m races and three of them achieved a medal, the probability of achieving a medal from third position at 600m would be 0.5 or 50%.

Statistical analysis. Statistical analyses were performed with Statistical Package of Social Sciences (SPSS) software, 27.0 version (IBM, Armonk, NY), and figures were made with GraphPad Prism, 8^{th} version (GraphPad Software Inc, San Diego, CA). The normality of distribution of the variables was assessed using Shapiro-Wilk test.

Relative performance and section speed differences between medalists and T8 in 800-m finals were assessed using independent t-tests, whereas in the 1500-m, 1-way ANOVA was used to determine these differences between medalists, T8 and T12. The Tukey post hoc test was conducted if significant differences existed for the 1500-m groups. Effect size (ES) was calculated using Cohen's *d* for the independent t-tests and Tukey tests,[22] and eta partial squared (η_p^2) for the 1-way ANOVAs.[23] Cohen's *d* was considered trivial ($d < 0.2$), small (0.2-0.6), moderate (0.6-1.2), large (1.2-2.0), and very large (2.0-4.0),[24]

whereas η_p^2 was considered to be small ($\eta_p^2 < 0.01$), moderate (0.01-0.06) or large ($\eta_p^2 > 0.15$).[22]

Pearson's product correlation was used to analyze the relationships between intermediate position and ROSPT with final position, both in 800-m and 1500-m races, the magnitude of the correlation was measured using the following thresholds: <0.1-0.3 (small), <0.3-0.5 (moderate), <0.5-0.7 (large), <0.7-0.9 (very large) and <0.9-1 (extremely large).[24] Statistical significance was accepted when $p < 0.05$, differences between groups are presented with a 95% confidence interval (CI). Data for each group will be presented as mean (standard deviation).

Results

Men's and women's 800-m M were faster relative to their SB (99.5% [0.88%] and 100.43% [0.82%], respectively) than T8 (98.62% [1.08%] and 99.83% [1.12%], respectively; $p = 0.006$; 95% CI, 0.27-1.49; $d = 0.87$, and $p = 0.039$; 95% CI, 0.03-1.16; $d = 0.59$, respectively) (Figures 1A and 1B); whereas significant differences were not found between 1500-m groups (Figures 1C and 1D).

Figure 1 around here

Regarding sections' performance relative to SB, men's 800-m M were relatively faster than T8 in the 700-800m section (97.67% [4.4%], and 94.16% [6.53%], respectively; $p = 0.05$; 95% CI, 0.002-7.03; $d = 0.6$) (Figure 2A). Women's 800-m M were relatively slower than T8 in the 300-400m section (96.32% [2.16] and 97.65% [1.84%], respectively; $p = 0.019$; 95% CI, -2.42- [-0.22]; $d = -0.67$), but relatively faster in the 700-800m section: (100.01% [3.92%] and 94.92% [4.23%], respectively; $p < 0.001$; 95% CI, 2.8-7.38; $d = 1.24$) (Figure 2B).

In the 1500-m, men's M were relatively faster than T8 and T12 in both 1300-1400m (105.42% [3.25%], 105.16% [3.51%] and 101.23% [6.25%], respectively; $p = 0.003$; $\eta_p^2 = 0.15$) and 1400-1500m sections (105.92% [4.73%], 103.96% [5.35%] and 99.18% [8.17%], respectively; $p = 0.002$; $\eta_p^2 = 0.16$) (Figure 2C). On the other hand, women's M were relatively faster than T8 and T12 from the 1100-1200m section onwards. Specifically, at the 1100-1200m (105.72% [5.,48%], 105.13% [5.73%] and 101.6% [6.22%], respectively; $p = 0.024$; $\eta_p^2 = 0.1$), 1200-1300m: (108.95% [4.15%], 105.86% [5.4%] and 101.19% [7.08%], respectively; $p < 0.001$; $\eta_p^2 = 0.22$), 1300-1400m (107.01%

[4.04%], 102.88% [4.69%] and 98.34% [5.79%], respectively; $p < 0.001$; $\eta_p^2 = 0.31$) and 1400-1500m (101.32% [5.06%], 99.6% [5.05%] and 96.55% [7.05%], respectively; $p = 0.027$; $\eta_p^2 = 0.1$) sections (Figure 2D).

Figure 2 around here

Correlation between intermediate and final position increases as the race progresses in the men's 800-m, being even negative in the first stage of the race (100m and 200m points). This correlation does not become large until 600m ($r > 0.5$). However, in women's 800-m finals, a very or extremely large correlation exists from the 100m point onwards, and it is maintained throughout the whole race (Table 1). ROSPT showed a higher correlation with final position than intermediate position in men's 800-m finals, especially in the last 200m of the race, whereas a high correlation was found in the first 100m section in women's 800-m and all those of the second lap (Table 1).

Table 1 around here

In the 1500-m, correlation between intermediate and final position increases as the race progresses in both men's and women's finals. Nevertheless, this correlation increases at a faster rate in women, being extremely large ($r > 0.9$) from 900m onwards, whereas that magnitude of correlation was found from the 1100m onwards in men (Table 1). ROSPT correlation with final position increases with distance, being extremely large in the last two sections in men's finals ($r > 0.9$). This correlation was 0.89 or higher in all sections of the second half of the race in women's 1500-m finals, except for the last one ($r = 0.86$) (Table 1).

Race positions showed a greater stability in women's 800-m finals (Figure 3B) compared to that in their men's counterparts (Figure 3A). Women's M were at higher position than T8 at all intermediate points ($p < 0.01$; 95% CI; $-3.2 \leq d \leq -0.8$) (Figure 4B), whereas men's M were only at higher position than T8 at the 600m ($p = 0.006$; 95% CI, -3.2 – [-0.58], $d = -0.86$) and 700m points, ($p = 0.004$; 95% CI, -4.16 – [-1.92], $d = -1.62$, respectively) (Figure 4A).

Figure 3 around here

Stability in race positions is similar in both men's (Figure 3C) and women's (Figure 3D) 1500-m finals. However, in the second half of the race, a higher stability is observed in

189 women's. Differences in intermediate positions between groups were found from 300m
190 onwards ($p < 0.05$; 95% CI), in men (Figure 4C) and women (Figure 4D).

191 ***Figure 4 around here***

192 Probability of winning a medal decreases with a lower position or ROSPT at each
193 intermediate point or section in both men's and women's 800-m (Table 2) and 1500-m
194 (Tables 3 and 4) finals. The first positioned athlete at 600m and 700m points in women's
195 800-m finals has a probability of 100% of winning a medal. However, in 1500-m finals,
196 athletes in podium position at the beginning of the last lap have a probability of 50% or
197 more to win a medal. That percentage increases throughout the last lap, and especially in
198 runners displaying a higher ROSPT.

199 ***Table 2 around here***

200 ***Table 3 around here***

201 ***Table 4 around here***

202 **Discussion**

203 The aim of this study was to analyze tactical behaviors related to performance in 800-m
204 and 1500-m global championships finals using positional and time data every 100m. A
205 similar analysis was carried out in global championships' qualifying rounds[16,17] with
206 lower resolution data.

207 Mean performance in men's 800-m and men's and women's 1500-m finals were slower
208 than their mean SBs, as found in a previous study analyzing global championships'
209 qualifying rounds.[17] This may be due to the different goals inherent to championship (i.e.,
210 achieving the highest position) vs meet (i.e., obtaining the fastest time) races,[9] greater
211 pace variability typically observed in championship vs. meet races,[12] the absence of
212 pacemakers,[8] and the fatigue generated in qualifying rounds.[13] These slower relative
213 times were not found in women's 800-m finals, probably due to the more 'even' strategy
214 displayed in women's races.[10] This phenomenon was also observed in other distances
215 such as the marathon, in which women display a more conservative start of the race,[25]
216 and a lower speed drop-off in the second half of the race compared to men,[26] while
217 producing a fast endspurt, especially in major championship races.[27] This disparity may
218 be multifactorial, with physiological (e.g., higher rates of glycogen depletion in men),[28]
219 neuromuscular (e.g., a higher proportion of type I muscle fibers in women)[29] and

psychological (e.g., men tending to exhibit more overambitious behavior than women)[26] factors potentially contributing to these sex differences.

Previous studies found that medalists at global championships typically advance to the final with relatively less exertion than their rivals, who need to make a maximal effort in qualifying rounds in order to secure a place in the final,[13] while employing a riskier strategy.[17] This extra effort leads to increased fatigue which potentially explains the differences in relative time to SBs found between 800-m groups. In this sense, the new play-off rounds introduced in Paris 2024 OG could play an important role in the qualification process, as they offer a second opportunity to the athletes who have not qualified for the next round. However, this also results in an increased physical load, as athletes are required to participate in an additional race, potentially generating a higher fatigue level in subsequent rounds.

Analyzing relative sections' speed profile, a consistent pattern emerges in both 800-m men's (Figure 2A) and women's (Figure 2B) finals. The T8 group exhibits a higher relative speed in several sections during the first lap, enabling medalists to conserve energy and finish the race significantly faster than their competitors. This may suggest that medalists were able to achieve higher speeds in the final segment by better preserving their physiological reserve during the earlier race stages.[30] Notably, in the women's finals, the T8 group demonstrates a higher relative speed in the 300-400m section, whereas the opposite trend is observed in the final 100m. This phenomenon was documented in a previous study, suggesting that non-medalists expend additional energy in the initial lap by trying to remain with the leading group and benefit from the drafting effect.[11]

In the 1500-m event, differences in sections relative speed between groups appear in the final stages of the race, although they manifest earlier in women (i.e., at the 1100-1200m section, Figure 2D), than men (i.e., at the 1300-1400m section, Figure 2C). Similarly, findings from a previous study reveal that 1500-m women's global championship medalists left their rivals behind earlier in the race (i.e., at the 1200m point) than their men's counterparts (i.e., in the last 100m).[14] Consequently, in the 1500-m event, in which variable pacing results in relative finishing times slower than SB,[10] the ability to generate a fast endspurt by running the final race stages at a higher speed than that of SB significantly enhances the likelihood of winning a medal. Additionally, a previous study showed that the first lap of 1500-m meet races are faster than those in championships, whereas the latter sections of the race are faster in championship races.[9] Furthermore,

findings from another study indicates that medalist exhibit greater pace variability than non-medalists in middle-distance events such as 400-m swimming and 1500-m running, with the medalists being much faster in the last lap of the race.[31] This underscores the importance of the endspurt in middle-distance races and the necessity for distinct training approaches for championship compared to meet races.[32]

Correlation between intermediate and final position is notably large in women's 800-m from the first intermediate point (Table 1), and this strong correlation persists throughout the race. This observation may explain the higher positional stability observed in women's 800-m finals (Figure 3B), compared to those in men (Figure 3A). This correlation is higher than in previous rounds,[16,17] indicating that the highest-level athletes tend to take leading positions early in the race during women's 800-m finals. Differences in intermediate position between groups of women's 800-m finals appeared from the beginning of the race (Figure 4B). These results align to those of previous studies which demonstrated a higher density level in men's races, making it more difficult to create a gap between medalist and non-medalist runners.[32] By contrast, the lower density in women's races presumably allowed the fastest ones to adopt high speeds from the beginning and a more even pace throughout the race.[33] In men's 800-m finals, differences in intermediate position become apparent from 600m onwards (Figure 4A). At this point, the correlation between intermediate and final positions becomes large (Table 1). Despite this, the final position shows a greater correlation with ROSPT in men's 800-m finals, particularly in the last lap, as noted in a previous study.[17] The ROSPT of the last lap is also highly related to the finishing position in women's 800-m finals, underscoring the importance of not only the positioning ability, but also that of generating a fast endspurt.

In the 1500-m event, the correlation between intermediate and final positions increases more rapidly in women's finals (Table 1), exceeding 0.9 at 900m. From that point onwards, little position change is observed (Figure 3D). In men, a correlation above 0.9 is observed later at 1100m. This difference may be attributed to the earlier separation in the race between medalists and non-medalists in women's finals.[14] This earlier separation in women's finals could explain the higher correlation between ROSPT and final position in the last 100m of men's 1500-m finals compared to women's (Table 1), as men tend to reach the last section closer to each other.

The higher data resolution allows for the observation of more changes in position than in previous studies,[16,17] although, as in that investigation, higher positional stability is

observed in 800-m races compared to 1500-m races. This stability is more pronounced in women's events (Figure 3), particularly in 800-m finals, which enables athletes to employ a more 'even' strategy.[10] Consequently, athletes may cover a lower total distance by avoiding running wide on the bends,[4] due to fewer overtakes, thus achieving final times faster than their SB (Figure 1B).

Previous research has established that higher intermediate position increases the probability of success,[16,17] both in middle distance preliminary rounds and semifinals. A similar pattern is observed in 800-m (Table 2) and 1500-m (Table 3) finals, albeit with lower percentages than those reported in the aforementioned studies.[16,17] This discrepancy may be attributed to the higher density level in the finals, where only the top 8-12 athletes in the world are competing, and by the fewer number of successful athletes in the finals (three medalists) compared to that in previous rounds (e.g., 5-6 qualifiers for the next round).

A better ROSPT increases the probability of winning a medal, both in 800-m (Table 2) and 1500-m (Table 4) finals and is particularly crucial in the final stages of the race. This finding underscores the importance of a fast endspurt.

The limited numbers of races included may influence the interpretation of the results, as different race paces or strategies could introduce bias into the study's outcomes. Further research will be required to confirm these results.

Practical applications

The findings of this study will be useful for coaches in planning specific training sessions for athletes preparing for global championships. Such preparation should enable athletes to run races with a higher pace variability than that typically performed during meet races, and to maintain very high speeds in the final stages of the race.

Additionally, it is essential for athletes to understand the tactical aspects influencing the achievement of a medal. This includes the necessity of maintaining proper positioning, especially in the final sections of the race, and recognizing that women's 800-m and 1500-m medalists tend to adopt higher positions earlier in the race than their men's counterparts.

Finally, the authors highlight that the tactical behaviors analyzed were executed by elite athletes, and the success derived from their implementation largely depends on their

317 exceptional physical and psychological abilities. Overgeneralizing these behaviors would
318 be erroneous, as non-elite competitions involves distinct contexts and the capabilities of
319 athletes differ significantly from those of competitors at the highest level.

320 **Conclusions**

321 Our analysis has delved into the tactical elements influencing medal achievement in
322 middle-distance track events, revealing differences across events and sexes. Women's
323 800-m finals are distinguished by a very large correlation between intermediate and final
324 position from the race start, fostering greater positional stability. Conversely, in men's
325 800-m finals, the highest correlations between intermediate and final position were found
326 in the final 200m. Lower-level athletes tend to run the first half of the race at a higher
327 relative speed, presumably to maintain proximity to the leading group and benefit from
328 the drafting provided by the rest of competitors.

329 In 1500-m, differences in relative section speeds were found in the final stages of the race,
330 manifesting earlier in women's finals. The ability to run the final race stage at speeds
331 much higher than that of athletes' SB is crucial for medal contention. This ability is
332 influenced by the numerous fluctuations in pace experiences in preceding sections, a
333 hallmark of championship races.

334 A poor positioning behavior or a relative slowing with respect to the rest of the
335 competitors, will considerably reduce the probability of winning a medal, particularly in
336 the last lap of the race. This underscores the rigorous standards demanded for the
337 achievement of an Olympic or World Championship medal in middle-distance track
338 events.

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Figure captions

Figure 1: Mean race speed relative to S_{SB} (%) in M and T8 groups in 800-m finals and P, T8 and T12 groups in 1500-m finals. Differences between groups are represented by * ($p < 0.05$). S_{SB}, Season best speed; M, Medallists; T8, Top 8; T12, Top 12.

Figure 2: Mean section speeds relative to S_{SB} (%) in M, T8 and T12 groups of 800-m and 1500-m finals. Differences between groups ($p < 0.05$) are represented by * (M vs T8), # (M vs T12) and † (T8 vs T12) in the corresponding section. A double symbol represents differences with $p < 0.01$. S_{SB}, Season best speed; M, Medallists; T8, Top 8, T12, Top 12.

Figure 3: Mean intermediate positions of athletes finishing in each available position in 800-m and 1500-m races.

Figure 4: Mean intermediate positions of M, T8 and T12 groups in 800-m and 1500-m finals. Differences between groups ($p < 0.05$) are represented by * (M vs T8), # (M vs T12) and † (T8 vs T12) in the corresponding section. A double symbol represents differences with $p < 0.01$. M, Medallists; T8, Top 8, T12, Top 12.

Table 1: Correlation of intermediate position and ROSPT with final position

Intermediate position			**ROSPT**		
Distance	**r (M800)**	**r (W800)**	**Section**	**r (M800)**	**r (W800)**
100m	-0.39	0.84 **	0-100m	-0.39	0.84 **
200m	-0.15	0.74 *	100-200m	0.66	0.19
300m	0.14	0.77 *	200-300m	0.48	0.4
400m	0.49	0.8 *	300-400m	0.75 *	-0.02
500m	0.44	0.79 *	400-500m	0.68 *	0.79 *
600m	0.66	0.9 **	500-600m	0.81 **	0.91 **
700m	0.85 **	0.96 **	600-700m	0.97 **	0.95 **
800m	-	-	700-800m	0.91 **	0.99 **
Distance	**r (M1500)**	**r (W1500)**	**Section**	**r (M1500)**	**r (W1500)**
100m	0.02	0	0-100m	0.12	0
200m	0.42	0.35	100-200m	0.75 **	0.41
300m	0.55	0.77 **	200-300m	0.52	0.57 *
400m	0.59 *	0.75 **	300-400m	0.58 *	0.70 **
500m	0.67 *	0.78 **	400-500m	0.52	0.60 *
600m	0.71 **	0.81 **	500-600m	0.72 **	0.80 **
700m	0.78 **	0.84 **	600-700m	0.70 **	0.43
800m	0.81 **	0.90 **	700-800m	0.54	0.94 **
900m	0.81 **	0.93 **	800-900m	0.79 **	0.89 **
1000m	0.85 **	0.93 **	900-1000m	0.87 **	0.94 **
1100m	0.93 **	0.95 **	1000-1100m	0.81 **	0.89 **
1200m	0.95 **	0.96 **	1100-1200m	0.89 **	0.98 **
1300m	0.97 **	0.97 **	1200-1300m	0.77 **	0.98 **
1400m	0.99 **	0.99 **	1300-1400m	0.92 **	0.99 **
1500m	-	-	1400-1500m	0.94 **	0.86 **

r, Pearson's product correlation; ROSPT, Rank order section time; M800, Men's 800-m; W800, Women's 800-m; M1500, Men's 1500-m; W1500, Women's 1500-m; p-value represented with * ($p < 0.05$) and ** ($p < 0.01$).

Table 2. Probability (%) of winning a medal for athletes in each position and ROSPT in 800-m finals

	Men' 800-m							Women's 800-m						
P 800	**P 100m**	**P 200m**	**P 300m**	**P 400m**	**P 500m**	**P 600m**	**P 700m**	**P 100m**	**P 200m**	**P 300m**	**P 400m**	**P 500m**	**P 600m**	**P 700m**
1º	33.3	16.7	33.3	50	33.3	66.7	83.3	100	83.3	83.3	66.7	83.3	100	100
2º	16.7	66.7	83.3	50	66.7	50	83.3	50.0	66.7	50.0	83.3	66.7	66.7	66.7
3º	0	16.7	16.7	50	33.3	50	33.3	66.7	33.3	50.0	33.3	33.3	66.7	66.7
4º	66.7	33.3	0	16.7	50	33.3	50	16.7	33.3	50.0	33.3	50	16.7	16.7
5º	50	50	16.7	33.3	16.7	50	50	16.7	16.7	16.7	0	0	16.7	16.7
6º	66.7	50	83.3	33.3	50	33.3	0	0	16.7	16.7	50	16.7	0	0
7º	33.3	33.3	16.7	33.3	33.3	16.7	0	33.3	33.3	16.7	16.7	33.3	33.3	33.3
8º	16.7	33.3	50	33.3	16.7	0	0	16.7	16.7	16.7	16.7	16.7	0	0
9º	16.7	0	0	0	0	0	0	-	-	-	-	-	-	-

ROSPT 800	**0-100m**	**100-200m**	**200-300m**	**300-400m**	**400-500m**	**500-600m**	**600-700m**	**700-800m**	**0-100m**	**100-200m**	**200-300m**	**300-400m**	**400-500m**	**500-600m**	**600-700m**	**700-800m**
1º	33.3	33.3	33.3	50	50	83.3	100	33.3	100	33.3	50	33.3	66.7	50	83.3	100
2º	16.7	66.7	50	66.7	66.7	66.7	83.3	66.7	50.0	50	50	16.7	33.3	66.7	50.0	83.3
3º	16.7	33.3	16.7	16.7	50	50	50	83.3	66.7	50	66.7	33.3	66.7	50	83.3	50
4º	50	50	50	50	16.7	33.3	33.3	50	16.7	33.3	33.3	33.3	33.3	33.3	33.3	33.3
5º	50	33.3	16.7	16.7	33.3	33.3	33.3	66.7	16.7	50.0	0	83.3	50	33.3	16.7	16.7
6º	83.3	50	50	50	50	0	0	0	0	50.0	33.3	33.3	16.7	50	33.3	16.7
7º	16.7	16.7	66.7	0	16.7	16.7	0	0	33.3	33.3	33.3	0	16.7	16.7	0	0
8º	16.7	16.7	16.7	50	16.7	16.7	0	0	16.7	0	33.3	66.7	16.7	0	0	0
9º	16.7	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-

P, Position; ROSPT, Rank order section time; M800, Men's 800-m; W800, Women's 800-m.

Table 3. Probability (%) of winning a medal for athletes in each position in 1500-m finals

P M1500	P 100m	P 200m	P 300m	P 400m	P 500m	P 600m	P 700m	P 800m	P 900m	P 1000m	P 1100m	P 1200m	P 1300m	P 1400m
1º	66.7	83.3	83.3	83.3	66.7	66.7	83.3	66.7	83.3	66.7	66.7	83.3	83.3	83.3
2º	16.7	16.7	16.7	16.7	50	50	50	66.7	50	66.7	66.7	66.7	83.3	83.3
3º	33.3	16.7	33.3	33.3	16.7	16.7	16.7	33.3	33.3	33.3	50	50	66.7	83.3
4º	16.7	16.7	16.7	33.3	33.3	33.3	33.3	50	33.3	33.3	16.7	33.3	16.7	16.7
5º	0	33.3	16.7	33.3	16.7	33.3	16.7	0	16.7	16.7	33.3	0	0	0
6º	16.7	33.3	66.7	33.3	50	0	0	0	16.7	33.3	16.7	33.3	50	33.3
7º	33.3	16.7	16.7	0	0	33.3	0	33.3	16.7	0	33.3	16.7	0	0
8º	33.3	33.3	16.7	33.3	16.7	33.3	50	16.7	0	0	0	16.7	0	0
9º	0	0	16.7	0	33.3	33.3	16.7	0	16.7	16.7	16.7	0	0	0
10º	33.3	33.3	0	16.7	16.7	0	16.7	16.7	0	16.7	0	0	0	0
11º	33.3	0	0	0	0	0	0	0	33.3	16.7	0	0	0	0
12º	16.7	16.7	16.7	16.7	0	0	16.7	16.7	0	0	0	0	0	0
13º	0	0	0	0	0	0	0	0	0	0	0	0	0	0
P W1500	**P 100m**	**P 200m**	**P 300m**	**P 400m**	**P 500m**	**P 600m**	**P 700m**	**P 800m**	**P 900m**	**P 1000m**	**P 1100m**	**P 1200m**	**P 1300m**	**P 1400m**
1º	33.3	33.3	66.7	66.7	66.7	66.7	66.7	83.3	83.3	83.3	83.3	83.3	83.3	83.3
2º	33.3	33.3	83.3	83.3	83.3	83.3	83.3	83.3	83.3	83.3	83.3	83.3	100	100
3º	16.7	33.3	66.7	33.3	50.	33.3	33.3	33.3	66.7	83.3	50	83.3	50	50
4º	33.3	33.3	33.3	50	16.7	50	50	66.7	33.3	16.7	33.3	16.,7	33.3	50
5º	16.7	33.3	0	16.7	33.3	16.7	33.3	16.7	16.7	0	16.7	0	16.7	16.7
6º	0	33.3	0	0	16.7	0	0	0	0	16.7	16.7	16.7	0	0
7º	16.7	16.7	16.7	0	0	16.7	33.3	0	0	0	0	0	16.7	0
8º	33.3	16.7	16.7	33.3	16.7	16.7	0	16.7	0	0	0	0	0	0
9º	0	16.7	0	0	0	0	0	0	0	0	0	16.7	0	0
10º	66.7	50	16.7	16.7	0	0	0	0	0	16.7	16.7	0	0	0
11º	33.3	0	0	0	16.7	16.7	0	0	16.7	0	0	0	0	0
12º	16.7	0	0	0	0	0	0	0	0	0	0	0	0	0
13º	0	0	0	0	0	0	0	0	0	0	0	0	0	0

519 P, Position; M1500, Men's 1500-m; W1500, Women's 1500-m.

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Table 4. Probability (%) of winning a medal for each ROSPT in 1500-m finals

ROSPT M1500	0-100m	100-200m	200-300m	300-400m	400-500m	500-600m	600-700m	700-800m	800-900m	900-1000m	1000-1100m	1100-1200m	1200-1300m	1300-1400m	1400-1500m
1	66.7	83.3	33.3	16.7	33.3	33.3	33.3	33.3	33.3	66.7	50	33.3	66.7	66.7	66.7
2	16.7	33.3	33.3	66.7	50	66.7	16.7	33.3	33.3	16.7	66.7	33.3	16.7	83.3	50
3	33.3	167	33.3	50	66.7	16.7	33.3	83.3	33.3	33.3	16.7	16.7	50	33.3	50
4	33.3	33.3	16.7	16.7	16.7	33.3	16.7	33.3	66.7	33.3	50	83.3	50	16.7	33.3
5	0	16.7	66.7	0	0	33.3	16.7	16.7	16.7	33.3	16.7	50	33.3	33.3	50
6	16.7	33.3	16.7	33.3	16.7	16.7	33.3	0	16.7	33.3	16.7	33.3	33.3	16.7	16.7
7	16.7	16.7	16.7	16.7	33.3	33.3	33.3	0	16.7	16.7	16.7	16.7	16.7	50	16.7
8	33.3	16.7	16.7	33.3	0	33.3	33.3	33.3	33.3	0	50	16.7	0	0	0
9	0	0	16.7	33.3	16.7	16.7	33.3	16.7	33.3	33.3	16.7	16.7	0	0	16.7
10	33.3	16.7	16.7	0	16.7	0	16.7	16.7	16.7	16.7	0	0	33.3	0	0
11	33.3	33.3	33.3	16.7	16.7	16.7	33.3	16.7	0	16.7	0	0	0	0	0
12	16.7	0	0	16.7	33.3	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	16.7	0	0	0	0	0	0	0
ROSPT W1500	0-100m	100-200m	200-300m	300-400m	400-500m	500-600m	600-700m	700-800m	800-900m	900-1000m	1000-1100m	1100-1200m	1200-1300m	1300-1400m	1400-1500m
1	33.3	50	50	50	33.3	83.3	16.7	66.7	33.3	66.7	50	83.3	83.3	100	33.3
2	33.3	33.3	83.3	66.7	16.7	33.3	16.7	66.7	50	100	33.3	66.7	83.3	100	66.7
3	16.7	50	50	16.7	50	50	33.3	33.3	33.3	66.7	50	83.3	50	50	83.3
4	33.3	50	16.7	50	33.3	50	66.7	16.7	33.3	33.3	50	33.3	33.3	0	0
5	16.7	33.3	16.7	33.3	50	16.7	33.3	33.3	33.3	0	0	0	50	50	33.3
6	0	0	16.7	0	50	16.7	16.7	50	66.7	16.7	0	33.3	0	0	0
7	16.7	16.7	0	16.7	16.7	33.3	50	0	16.7	0	50	0	0	0	33.3
8	33.3	16.7	0	0	0	0	0	0	16.7	0	16.7	0	0	0	0
9	0	0	0	16.7	16.7	0	33.3	0	0	16.7	16.7	0	0	0	16.7
10	66.7	33.3	16,7	33.3	33.3	0	33.3	16.7	0	0	16.7	0	0	0	33.3
11	33.3	16.7	16,7	16.7	0	16.7	0	0	16.7	0	16.7	0	0	0	0
12	16.7	0	33,3	0	0	0	0	16.7	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

524 ROSPT, Rank order section time; M1500, Men's 1500-m; W1500, Women's 1500-m.

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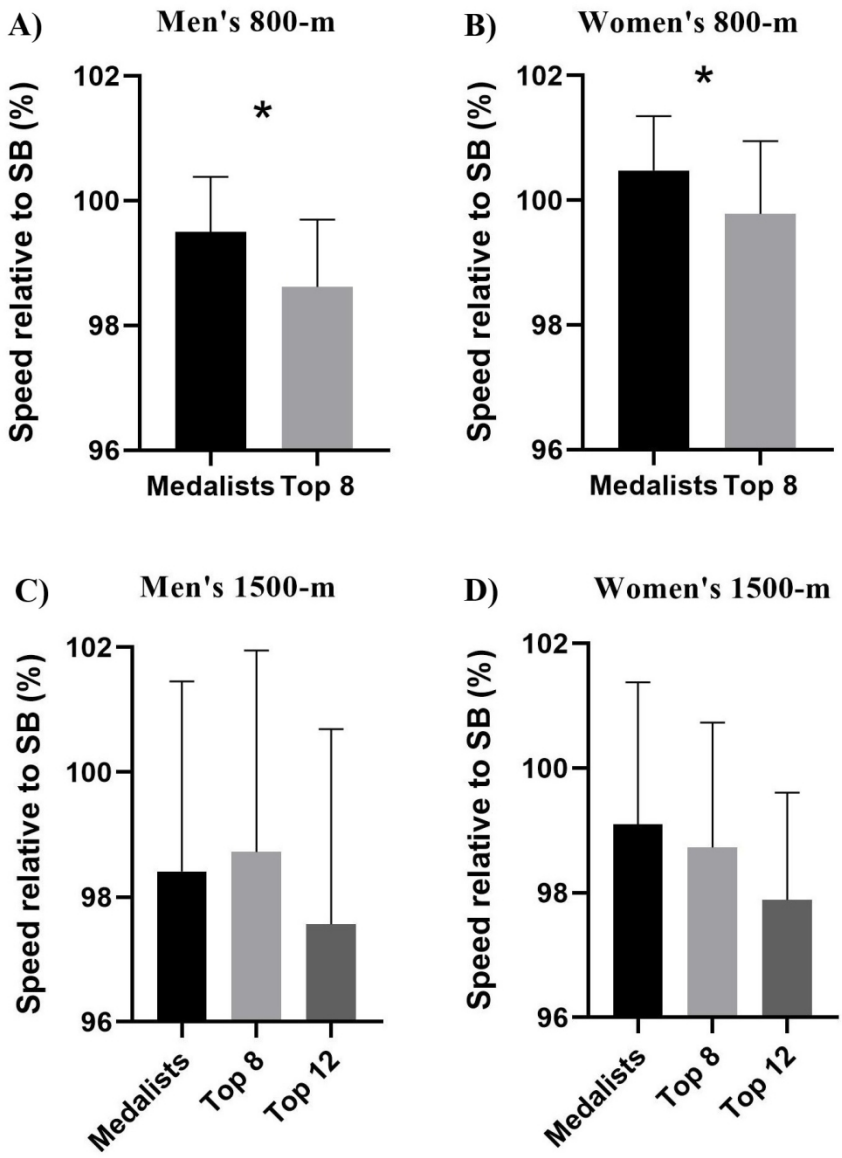

Figure 1: Mean race speed relative to SSB (%) in M and T8 groups in 800-m finals and P, T8 and T12 groups in 1500-m finals. Differences between groups are represented by * ($p < 0.05$). SSB, Season best speed; M, Medallists; T8, Top 8; T12, Top 12.

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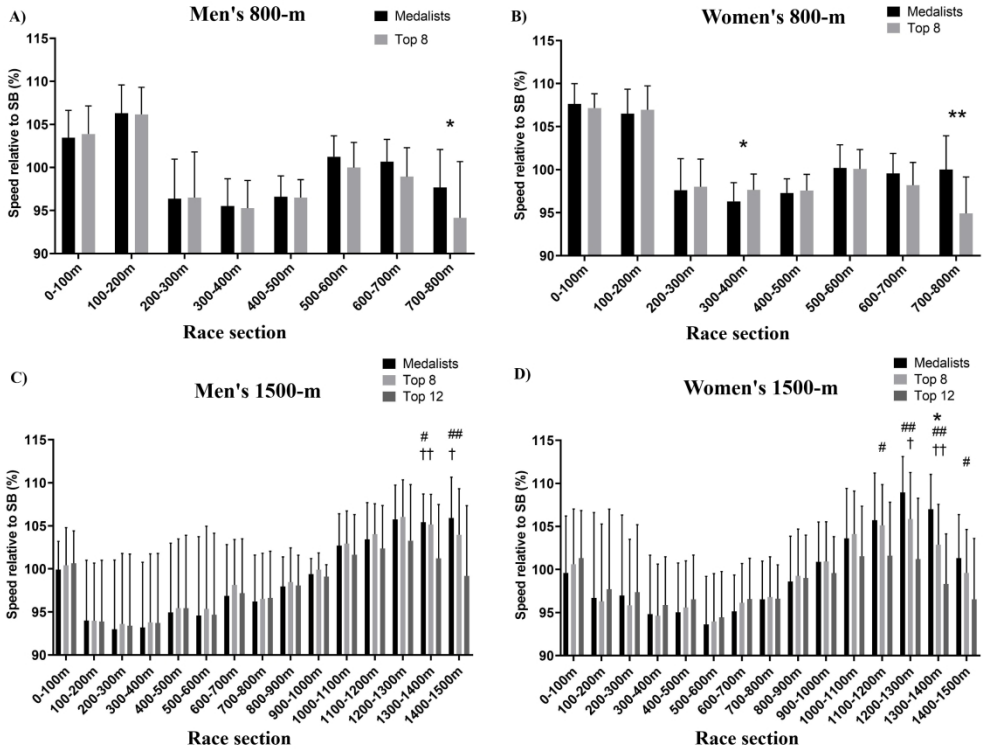

Figure 2: Mean section speeds relative to SSB (%) in M, T8 and T12 groups of 800-m and 1500-m finals. Differences between groups ($p < 0.05$) are represented by * (M vs T8), # (M vs T12) and † (T8 vs T12) in the corresponding section. A double symbol represents differences with $p < 0.01$. SSB, Season best speed; M, Medallists; T8, Top 8, T12, Top 12.

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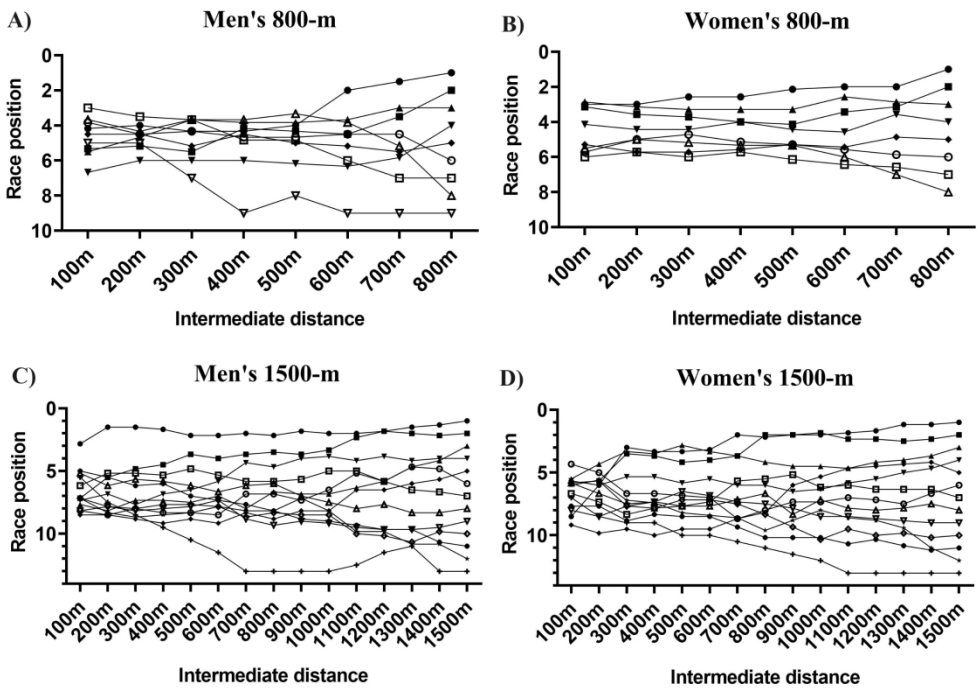

Figure 3: Mean intermediate positions of athletes finishing in each available position in 800-m and 1500-m races.

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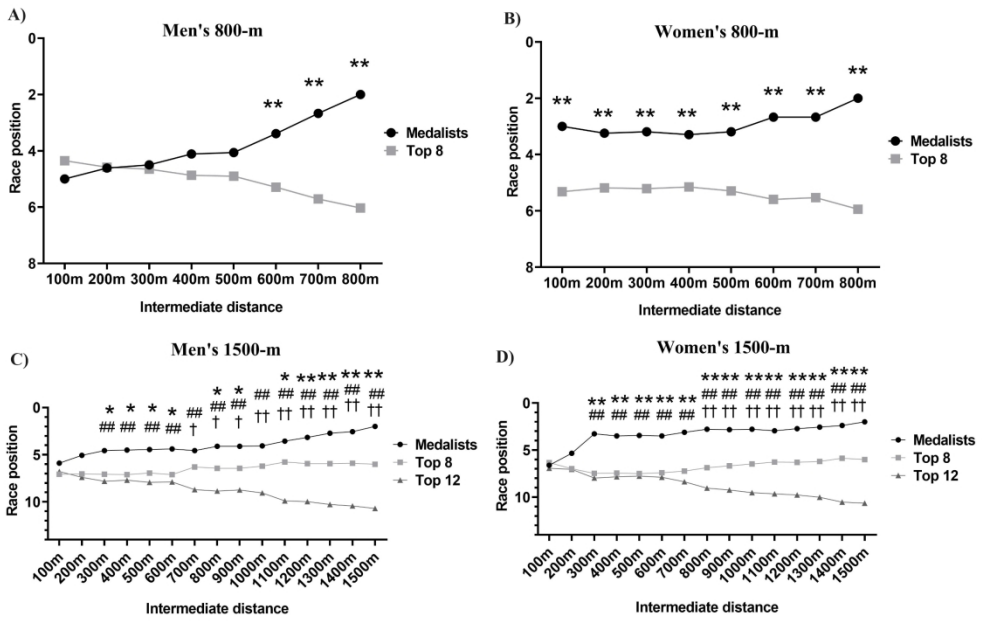

Figure 4: Mean intermediate positions of M, T8 and T12 groups in 800-m and 1500-m finals. Differences between groups ($p < 0.05$) are represented by * (M vs T8), # (M vs T12) and † (T8 vs T12) in the corresponding section. A double symbol represents differences with $p < 0.01$. M, Medallists; T8, Top 8, T12, Top 12.

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