

Analysis of Kenya's performance at the Olympic Games in track and field (1956 - 2016), reasons for success and the need for event diversification

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Abstract

Kenya has excelled in international sports, especially in middle and distance events. To date, Kenya has won 104 Medals at the Olympic Games with 97 (93.27%) being in track and field and the remaining 07 (6.73%) from boxing. Out of the 97 won in track and field, 91 (93.81 %) were in middle and distance events. Additionally, women have won 24 (24.74%) medals compared to 73 (75.26%) won by the men in track and field. In 2016 Rio Olympic Games, the Kenyan women won 7 medals compared to 6 won by the men. This sustained dominance continues in the wake of many Kenyan athletes changing their national allegiance to run for other countries where they have even earned medals at the Olympic Games. Thus, Kenya needs to diversify more in track and field events to broaden the scope of competition to sustain and solidify the status of being a powerhouse in track and field.

Keywords: Kenya, Olympic Games, Middle and Distance Events, National Allegiance, Track and Field, Athletics Scholarships, Altitude

Introduction

Kenya is one of the African countries where sport is highly regarded and when the summer Olympic Games begin, Kenyans watch with great interest. It is also during these Games that the nation puts away persistent political bickering to root for sports men and women on Olympic duty. Before departure for the games, the delegation is hosted by the President, who hands to them the official national flag as a way of reminding them that they are on a patriotic mission to represent the nation with honor and sacrifice. It is a patriotic duty! And after the Olympics are over and depending on the performance, in terms of number of medals won, a critical appraisal is undertaken via a Commission of Inquiry to investigate any mishaps, including team selection, pre-games preparation, allowances for participants, stolen athlete uniforms, excess joyriders or poor performance. Such reports, unfortunately, never yield any meaningful changes in policy or practice pertaining to administration and management of sports in the country. Seiler (2013) has described the chase for medals at the Olympic Games as a "zero sum game" (p. 203) played by all the competing countries. This means that success by one country in international sport must always come at the expense of others with their eyes on the same goal. Yet, after every four years, the nation goes through a similar routine with an emphasis on winning more medals.

This persistent desire to win more medals at the Olympic level, or any other international event, by the nation's leadership has pushed Kenya to establish and sustain a powerful and relatively successful sporting tradition since entering international sport in 1951. The Vancouver Commonwealth Games (1954) and the Melbourne Olympic Games (1956), were the first two mega sport competitions where Kenya made a decisive impact in distance running led by the legendary Nyandika Maiyoro (Amin & Moll, 1972). Since making an international debut in competitive sport, Kenya's athletes, their wins and style of running has projected a positive image of the country around the world. Virtually everywhere a Kenyan goes, the question that is posed is: are you are a runner? The assumption by many people who follow sport in the media is that because one is from Kenya,

then one is naturally a runner. This is due to the largescale presence of Kenyan middle and distance runners participating and winning several high-profile road races, marathons, track and field events around the globe (Njororai, 2012, 2016), particularly so at the Olympic Games where the national anthem has become a familiar tune. The Kenyan running success story has attracted plenty of research interest informed by different disciplinary lens. These studies include (i) physiological explanations relating to diet, energy balance, neuromuscular functioning, anatomy, genetic makeup and body composition (Fudge et al., 2008; Onywera et al., 2006; Saltin et al., 1995; Scott et al. 2009); (ii) anthropological explanations relating to traditions, customs and rituals, geography, and the meaning of running to different groups of people (Denison, 2007; Finn, 2012; Manners, 1997, 2007); (iii) historical and economic explanations concerning colonialism, imperialism, racism, and the way in which different African nations have responded to independence and the part that sport has played historically in nation-building (Bale & Sang, 1996; Mazrui, 1986; Simms & Rendell, 2004); and (iv) sociological and political economic explanations, which highlight a division of labor, personal motivations to escape poverty, power and corruption in both world and local athletics, the struggle for recognition and respect by men and women runners from different parts of Africa, the development of sport in Africa, and the role of sport in the development of Africa (Alegi, 2010; Armstrong & Giulianotti, 2004; Darby, 2002; Bloomfield, 2011; Jarvie & Sikes 2012; Njororai 2010, 2012, 2015, 2016).

Building on this literature, this article aims at analyzing the successful track and field performance of Kenya at the Olympic Games with a view of appreciating the evolution of the performances events (specialization) and gradual yet steady diversification in the sources of the medals on the podium. Additionally, the article seeks to illustrate the pattern of dominance in terms of track and field events and the emerging diversification to harness women's athletic potential as well as the hitherto unknown events where the country has had sporadic and unexpected victories. This article ends by highlighting the different perspectives that seek to explain Kenya's success in track and field since making a breakthrough at the 1968 Olympic Games in Mexico City.

Evolution of Kenya's performance at the Olympic Games

Over the past 54 years, Kenya has made a major impact in track and field by competing favorably against superpowers in the Olympic Games since making a debut in 1956 at Melbourne, Australia (Njororai, 2004, 2016). The Kenyan flag has consistently flown amidst superpowers such as the United States of America (US), Great Britain, China, Russia, Germany, Japan, and others that have been associated with domination of the Olympic Games (Njororai, 2010). Kenya's dominant presence in track and field can be traced back to people's athleticism that characterized the traditional physical and recreational culture of dancing, hunting and wrestling in the country. These characteristics of physical expression in traditional activities found a new medium via western sports that were introduced in the early part of the 19th Century including track and field, soccer, volleyball and netball (Mählmann, 1988, 1992; Mazrui, 1986; Njororai, 2009, 2016).

However, it was not until 1951 that Kenya first participated in an international track and field competition. It took another three years to enter major international competitions, including the 1954 Vancouver Commonwealth Games and the 1956 Olympic Games in Melbourne, Australia (Amin & Moll, 1972; Bhushan, 1987; Tulloh, 1982) where her participation drew attention with gritty performances in distance events from the hero of the 1950s Mr. Nyandika Maiyoro. Since winning the first Olympic medal in 1964, Kenya steadily built a reputation as one of the most efficient medal winners at the Games. The Olympic Games have earned the right to be viewed as the most prestigious international sporting event due to history, tradition, global impact, and universal participation. This competition, which is held after every four years, gathers outstanding athletes

from more than 205 countries and consists of both team and individual sports (Del Corral et al., 2017). The triumphant track and field performances of Kenyan athletes at the summer Olympic Games over the years has earned the country global recognition as a powerhouse in distance running and athletes have been lauded for their extraordinary athletic endeavor and style.

Table 1 below provides a breakdown of Kenya's success at the Olympic Games from 1964 to 2016. It is also worth pointing out that Kenya started winning medals at the Olympic Games a year after gaining its independence.

Table 1: A Breakdown of Kenya's Medal Winners at the Olympics per event and year (Compiled by the author from IAAF.com and IOC.org)

Year	400m	400mh	400m X 4	800m	1500m	3000msc	5000m	10000m	Marathon	Javelin	Boxing	Total
1964	-	-	-	Bronze	-	-	-	-	-	-	-	1
1968	-	-	Silver	Silver	Gold	Gold Silver	Silver Bronze	Gold	-	-	Bronze	9
1972	Bronze	-	Gold	Bronze	Silver	Gold Silver	-	-	-	-	Silver Bronze-2	9
1976	Boycotted											
1980	Boycotted											
1984	-	-	-	-	-	Gold	-	Bronze	-	-	Bronze	3
1988	-	-	-	Gold	Gold	Gold Silver	Gold	Bronze	Silver	-	Gold Bronze	9
1992	Bronze	-	-	Gold Silver	-	Gold Silver Bronze	Silver	Silver	-	-	-	8
1996	-	-	-	Bronze	Bronze	Gold Silver	Silver- 2	Silver	Bronze	-	-	8
2000	-	-	-	-	Gold Bronze	Gold Silver	-	Silver	Silver Bronze	-	-	7
2004	-	-	-	-	Silver	Gold Silver Bronze	Silver Bronze	-	Silver	-	-	7
2008	-	-	-	Gold-2 Silver Bronze	Gold-2	Gold Silver Bronze	Silver Bronze- 2	Bronze-2	Gold Silver	-	-	16
2012	-	-	-	Gold Bronze-2	-	Gold Bronze-2	Silver Bronze	Silver Bronze	Silver-2 Bronze	-	-	13
2016	-	Silver	-	Gold Bronze	Gold	Gold Silver	Gold Silver	Silver-2	Gold-2	Silver	-	13
Total	2	1	2	16	10	25	15	12	12	1	7	103
Total Medals	2 B	1 S	1 G 1 S	6 G 3 S 7 B	6 G 2 S 2 B	11 G 9 S 5 B	2 G 8 S 5 B	1 G 6 S 5 B	3 G 6 S 3 B	1 S	1 G 1 S 5 B	31 G 38 S 34 B

Key: G- Gold, S- Silver, B- Bronze, MH- Meters Hurdles, MSC- Meters steeplechase, M-Meters

Table 1 above shows that the most productive event for Kenya, in terms of medals won, is 3000m steeplechase with 25 (24.04%), followed by 800m with 16 (15.38%) and 5000m at 15 (14.42%) respectively. The other events where Kenya has earned many medals include: 10000m (12 medals, 11.54%), marathon (12 medals, 11.54%), and 1500m 10 medals, (9.62%). It is instructive that the events that have yielded most medals at the Olympic Games are those where Kenya also did well in the 1968 Games, including 800m, 1500m, 3000m, 5000m and 10000m. This shows how consistency and tradition play a big part in its athletic dominance. This specialization on selected middle and distance events means that resources are channeled strategically to maintain the dominance while, at the same time, eliciting more interest from the potential athletes at the local level (Jarvie & Sikes, 2012). This dominance has made Kenya to be ranked among the most efficient performing nations at the Olympic level (Storm et al., 2016). The top relative ranking indicates that Kenya has found an efficient way of using resources to achieve international success in elite sport. One key aspect that a “small economy” like Kenya can effectively mobilize resources to support sport is to specialize in high medal yielding events and track and field events are the best representation of sporting monoculture. Thus, according to Storm et al. (2016), some of the top-ranked nations in the world are sporting monocultures in the sense that they are competitive only in a few sports in which they have a strong tradition and/or competitive advantage. Examples of such sporting monocultures that were highly ranked in 2012 include Jamaica, Kenya and Ethiopia due to their specialization in few competitive running disciplines.

The 3000 meters steeplechase is where Kenya has demonstrated the greatest domination. Indeed, Kenya has won Gold medals in all the last 11 Games, including 1968, 1972, 1984, 1988, 1992, 1996, 2000, 2004, 2006, 2012 and 2016 respectively. In some cases, Kenya took all the medals on offer for the men in 1992 and 2004 or two of the medals in 1968, 1972, 1988, 1996, 2000, 2008, 2012 and 2016. This success shows how Kenya has embraced and owned the event. Whoever is selected to run for Kenya in this event has the burden of tradition to fight and win the event. The inclusion of 3000m for women widened the opportunities for Kenyans as the women have also won medals at the 2008, 2012 and 2016 Olympics thereby sustaining the legacy of Kenya’s dominance in the event.

The other event that has yielded positive results for Kenya is the 800m. This was the first event for Kenya to win an Olympic medal in 1964 Tokyo Olympics. Since then, the country has won a total of 16 medals with six gold, three silver and seven bronze medals. Just like the steeplechase, both men and women are competitive at this event and have indeed won medals except in 1984, 2000 and 2004, where the country did not win any medals in 800m. In all other Olympic Games, Kenya has won a medal in the event including winning gold medals in 2008, 2012 and 2016. At the 2008 Olympic Games, Kenya turned in an exceptional performance winning four medals in the event, including two for men and two for women.

Apart from 800m, the 5000m event has also yielded 15 medals including two gold, eight silver and five bronze medals. John Ngugi and Vivian Cheruiyot won the two gold medals in 1988 and 2016 respectively. It appears that Kenya has underperformed in this event given that it has brought home only two gold medals, one for men and one for women. Given Kenya’s dominance in cross country, half marathon and marathon events, there is a higher expectation for more medals in this event. However, Kenya faced tough competition from Ethiopia, Great Britain via Mohammed Farah and Morocco over the last few years hence making it difficult to win gold medals. The same applies to 10000m where Kenya has won 12 medals including only one gold way back in 1968, six silver and five bronze medals. Again, the stiff competition from runners from Ethiopia, Morocco and Great Britain account for these trends. The events that have yielded more gold, even though

fewer overall medals include marathon (3 gold) and 1500m (6 gold). These two events yielded 10 and 12 medals respectively.

Thus, one can argue that the events where Kenya has comparative advantage in track include 3000m, 800m, 5000m, 10000m, marathon, and 1500m. However, there is room for major improvement and potential to earn more medals in javelin, 400 meters hurdles, 400m and the 400m X 4 relay as the country has won medals in these events too. Therefore, Kenya needs to invest in them and expand the possibilities of winning more medals on a consistent basis rather than doing so sporadically. The country should prioritize identifying potential talents in these events and expose them in age appropriate international competitions. Over time, they may win medals just as women have done since they started being exposed at international level. Thus, although Kenya is identified as a dominant power in distance running, there is indication that it can diversify to add sprints and throws to her portfolio. Tucker et al. (2015) and Santos-Concejero et. al. (2015) described Kenya's dominance in distance running as the most fascinating topic in exercise performance physiology. But as much as the focus around the world is on Kenya's distance running, Table 1 shows that the country has not harnessed and fully exploited the potential in the 400m flat and hurdle events as evidenced by the three medals won as well as the two in the relay way back in 1968 and 1972 Olympiads. Apart from the sprints, Julius Yego, who won the javelin world title in the 2015 World Athletics Championships, also won a silver medal in the 2016 Olympic Games. Although it is only one medal in a field event to date, it shows there is potential that requires harnessing and developing to diversify Kenya's athletic prowess.

To date, Kenya has demonstrated a steady broadening of the events where she not only competes but also wins medals. For example, in 1964, Kenya only won a medal in one event, followed by 6 track events in 1968 and boxing. However, in 2016, Kenya won medals in eight different track and field events. The additional medals from 400m hurdles and Javelin represents a desire to broaden the sources of medals for the country in addition to the sustained grip on the middle and distance events.

Kenya has participated in the Summer Olympics since 1956 to 2016, excluding the boycotted editions in 1976 and 1980 on political grounds. Kenya has won on average nine medals, ranging from one in 1964 to the high of 16 in 2008 (See Figure 1).

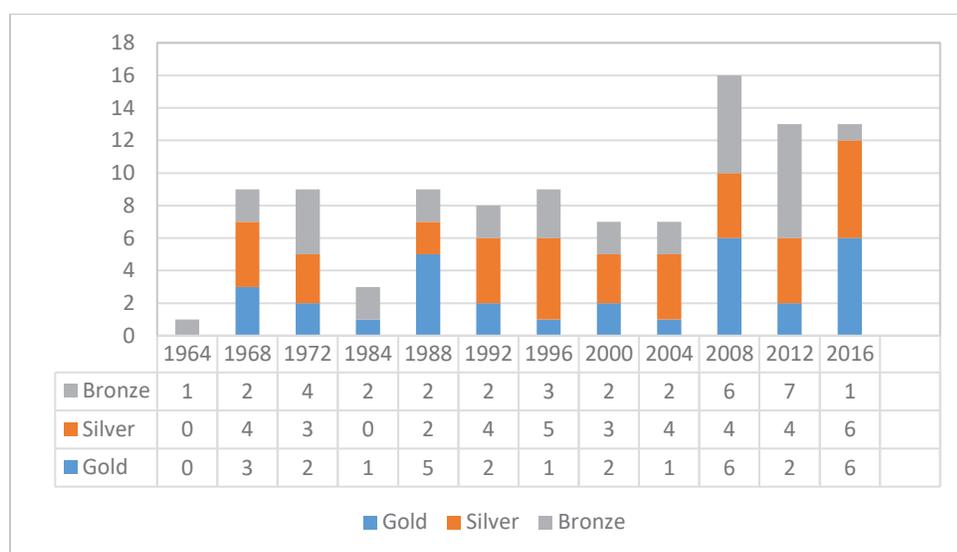


Figure 1: Medals won by Kenya at the Olympic Games, 1964 - 2016

In terms of gold medals, given the heavier weighting that a gold carries, Kenya's best years were in 2008 and 2016 where it took home six gold medals respectively. However, as Table 1 shows, there have been substantial variations over the last 12 editions of the games. The Olympic Games of 2008 were particularly successful followed by the 2016 edition. The historical profile also shows that Kenya's success in the summer Olympics over the last 10 years has increased compared with the previous period. Indeed, Kenya's performance suffered a great deal in 1984 as the country paid heavily for boycotting the Games in 1976 and in 1980. The commercialization of the sport and a mix of improved infrastructure courtesy of the United States of America (USA) based collegiate athletes; locally based, but full-time uniformed forces' representatives and foreign based training camps combined to yield a high medal count in 1988 in six track and two boxing events with five gold, two silver and two bronze medals. These Games also marked a major transition as the Cold War era ended. The Cold War era had been marked by a very strong eastern bloc of nations who practiced highly nationalized and systematic talent development, with domination on the women's side and systematic and uncontrolled doping practices. The period since 1992 has been associated with the fall of the eastern bloc and its dominance, the rise of national talent development and support programs around the globe especially in economically strong nations. All these external and internal factors have likely contributed to the improved medal outcomes for Kenya, especially with the entry into the fold for women who earned the first medal in 1996.

Figure 2 captures the vital contribution of women in winning medals at the Olympic Games even as men seem to have plateaued or in some cases declined. Prior to 1996 Olympic Games, all medals were won by only male athletes. Indeed, only few women were chosen to compete at the Olympic Games. However, since 1996 (see Figure 2), women have increasingly become more competitive and have complimented the accomplishments of the men thereby keeping Kenya in the upper echelons of successful nations in track and field (Njororai, 2015).

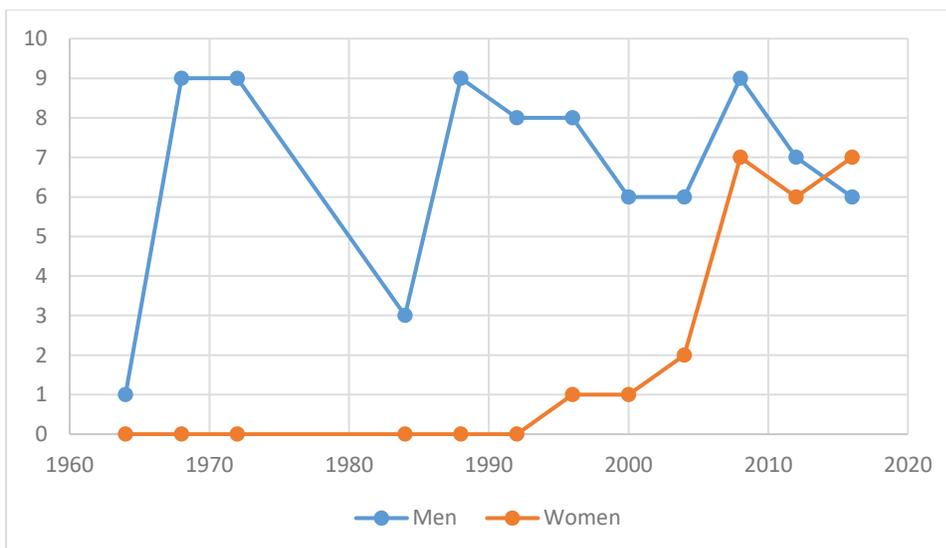


Figure 2: Increasing role of women as medal winners at the Olympic Games

Figure 2 shows that the men have consistently won medals at the Olympic Games since 1964 including winning 9 medals in 1968, 1972, 1988 and 2008. However, women did not win a medal until 1996 and increased to 7, 6 and 7 in 2008, 2012 and 2016 respectively. In terms of percentage,

women won 28.57, 43.75, 46.15 and 53.8 percent of Kenya's medals in the 2004, 2008, 2012 and 2016 Athens, Beijing, London and Rio Di Janeiro Olympic Games respectively. It is significant to note that in 2016, women athletes won more medals than the men for Kenya. It appears that whereas Kenya may have plateaued at winning medals by men, there is more room for growth and increase from women participants (Njororai, 2015). Additionally, there is potential for winning medals in nontraditional events such as hurdles, sprints and throws given that Kenya has won some medals in them too.

Roots of Kenya's distance running phenomenon

The consistent top-level performance by Kenyan athletes is grounded in the introduction and availability of the sport to many indigenous people both during the colonial and post-colonial periods. The accessibility of the sport via widespread infrastructure and school-based sport competition program up to national level laid a strong foundation. Over the years, sports have contributed immensely towards the enhancement of the general quality of life of the Kenyan youth, promotion of national patriotism, fostering national unity as well as a positive international profile of the country (Njororai, 2012, 2016). Sports and recreation in general are meaningful outlets for people not only in Kenya but across the globe. The history of sports in Kenya is rooted in the physically active lifestyles of indigenous people prior to the onset of the British rule. The people of Kenya were actively involved in traditional sports such as dance, wrestling, hunting, traditional archery and other sports that were unique to each cultural grouping. However, after the British entry and colonization of the Kenyan nation, new sports such as golf, tennis, cricket, horse racing and polo were introduced exclusive for the European settlers, while soccer, boxing and athletics (i.e. track and field) were for the indigenous people (Mählmann, 1988, 1992; Njororai, 2009, 2016).

The introduction of western sports in Kenya by the British targeted educational institutions which mirrored the institutionalized educational establishments in Great Britain. According to Mazrui (1986), sport is a crucial part of upbringing and education. He argues that the competitiveness of sports in the British school system was transported to Anglophone countries such as Kenya. Indeed, Mazrui attributes the success of the Anglophone countries in international competitions to the competitiveness of sports in the British school system. The foundation for sports, especially for track and field was the countrywide structure that revolved around schools and uniformed forces including Kenya police, prisons and army units. Mission schools such as St. Patrick's, Iten, Cardinal Otunga, Mosoch, Kiganjo Police Training College, Eregi Teachers College, among others were centers of athletic excellence headed by volunteer coaches who were often settlers from Great Britain. The countrywide structure of using Community Development Assistants to promote recreation activities at the locational level led to regional competitions, which produced talented runners and sports men and women, who often ended up in the uniformed forces including Kenya Prisons, Kenya Police, and the Army.

Many runners come from a poor background with few opportunities for elevating their standard of living and that of their larger families. However, school sport offers a glimpse of hope. One needs only to excel in inter-school sports competitions to gain the attention of national athletic officials, foreign university scouts, an outside sponsored club or to earn a job in the uniformed forces (Prisons, Police and Army). If one can then make it for an international race, then a breakthrough is feasible. Historically, successful athletes in school sport secured positions within institutional teams for uniformed forces and other Government and parastatal organizations as well as banks or went abroad on track scholarships to the USA, and later Japan. These options conferred significant advantages as athletes affiliated to an institution or foreign university provided the relevant resources, including technical training, infrastructure and material support to excel in competitions. According

to Jarvie and Sikes (2012) “without this support, it can be difficult to maintain the consistent training that successful long-distance running requires” (p. 637). In the 1970s and 1980s, US-based universities were focal points for harnessing Kenyan’s running talent before the armed forces and foreign-run clubs took over the Kenyan track and field scene in the late 1980s and after once the sport had been commercialized and professionalized. Institutionalization of sport in Kenya by the colonial and post-colonial Governments laid a strong foundation for the country’s eventual success in international athletics arena.

Apart from the external influence by the British colonizers, the success of Anglophone countries in sports, especially Kenya, has also to be traced back to the smooth transition from the indigenous cultures to the modern western sporting tastes. The indigenous people were quick to adopt the western sports, as they possessed athleticism and passion for physical movement culture. Other reasons advanced by Mazrui (1986), and later echoed by Wilber and Pitsiladis (2012) and Santos-Concejero et al. (2015), indicate Kenya’s success in distance running include the environmental factor. Specifically, Mazrui argues that living and competing at high altitude for most of the runners gives a major advantage in middle and distance running. The advantages of living at altitude, however, go hand-in-hand with other factors as high altitude exists all over the globe, yet elite runners mainly come from the East African Highlands.

One of Mazrui’s (1986) reasons for Kenya’s success being rooted in in the physical training culture of the armed forces and the police makes a lot of sense. Indeed, most pioneer runners were associated with the Kenya Police, Prisons and Army (Jarvis & Sikes, 2012). These units tend to employ persons who must exhibit above average running ability, good physical condition and, when subjected to intense training and conditioning, tend to emerge to compete locally and even internationally. The role of schools as centers of sports excellence and the recruitment of talented athletes into uniformed forces combined to produce the Olympic team members in the 1960s. For example, Wilson Kiprugut, Kipchoge Keino, among others were employees of the Kenya Police Force, while Amos Biwott, was still a high school student at the time he won a gold medal at the 1968 Mexico City Olympics. The success of Kenyan athletes drawn from schools elicited interest from American Universities and in the 1970s and 1980s, USA based athletes played a key role.

The other additional factors that Mazrui (1986) advances to explain Kenya’s success with running include the fact that the successful runners tend to come from communities where the indigenous culture places high value on athletics and sports in general. Researchers have given credence to this observation. According to Santos-Concejero et al. (2015), the Kalenjin ethnic group dominate distance running events at the Olympic Games, and other competitions, happen to be born and raised at high altitude. According to these authors, this early-life factor may influence fetal growth, particularly in individuals of multigenerational high-altitude ancestry. This may in turn have implications for later-life endurance performance, including a reduction in the degree to which arterial desaturation occurs during heavy exercise in elite performers. To complement the altitude factor, is the high levels of physical activity during their early childhood (Gibson et al., 2013; Ojiambo et al., 2013). It appears that the effects of considerable levels of physical activity during childhood lead to increased left ventricular mass, neuronal growth, and augmented cerebral circulation through increased vascularization of the brain (Santos-Concejero et al., 2015).

Finally, Mazrui (1986) also identifies athletics as a culture-neutral sport, which did not have any barriers to African participation. Thus, the fact that the indigenous cultures heavily favored physical activity, there were no cultural, and institutional restrictions to indigenous people’s participation led to embracing of athletics. Indeed, the local people embraced and heavily promoted track and field. Most educational institutions from primary to tertiary levels had to have basic provisions for track and field prior to opening doors to students. Apart from athletics, other sports

that were provided for in terms of basic infrastructure were soccer for boys, volleyball for both girls and boys and netball for girls. These opportunities for early life physical activity endowed the prospective elite athletes with lifelong benefits to their physiological function (Santos-Concejero et al., 2015) as well as the personal motivation to escape from poverty (Jarvie & Sikes, 2012).

Why the Success?

The Kenyan distance running success story has continued to generate curiosity and academic interest from various scholars across the globe. The astounding athletic performances by runners from Kenya are illustrated by the recent results at some international athletic competitions, which reveal consistent competitiveness from junior to senior levels. Indeed, Pitsiladis et al. (2004) declared the Kenyan distance running success story the best in the world. Tucker et al. (2015) and Santos-Concejero et al. (2015), described Kenya's dominance in distance-running events as one of the most fascinating topics in exercise performance physiology. Kenya's emergence and dominance in distance running is illustrated by an increase in the contribution of Kenyan men in the top-20 all-time performances in the track distance events (800-m and upward) from 13.3% in 1986 to 55.8% in 2003. Also, Kenyan (by birth) men have won 43 out of a possible 108 medals (41%) in distance events at the Olympic Games since 1990 and have won the team title at 24 of the last 27 world cross-country championships dating back to 1986.

Reflecting the zero-sum game nature of the Olympic medal chase, specific medal outcomes are influenced by both internal (personal performance) and external (everyone else's performance) variables. Only a few countries (i.e., the USA, China, Russia, Great Britain, and Germany) have the challenging combination of large population, diverse sports culture, rich economy, favorable seasonal conditions, national coaching expertise, and well-developed facilities as well as infrastructure to make themselves podium candidates in almost all summer Olympics sports (Seiler, 2013). For smaller countries, achieving Olympic success depends heavily on a few sports where they have a competitive advantage, and Kenya has established a winning tradition in track and field especially in the middle and distance events that are highly dependent on endurance.

Pitsiladis et al. (2004) observe that the unparalleled achievements of Kenyan runners on the international running circuit are in stark contrast to Kenya's economic/social infrastructure, where it ranks poorly in nearly every social and economic category (e.g. life expectancy, per capital income and child mortality). This dominance of Kenyan athletes at international distance running events over the last four decades is among the most remarkable examples of variation in human physiology and performance (Santos-Concejero et al., 2015; Wilber & Pitsiladis, 2012). Various studies have proposed a combination of favorable somatotypical characteristics leading to exceptional running economy (Saltin et al., 1995; Vernillo et al., 2013), environmental factors including chronic exposure to high altitude (Larsen, 2003), targeted moderate-volume, high-intensity training (Billat et al., 2003), strong motivation (Jarvae & Sikes, 2012; Onywera et al., 2006), higher efficacy in the use of the recoil of elastic energy from the tendinous structures (Sano et al., 2013), favorable oxidative enzyme profile (Saltin et al., 1995), and genetic factors (Entine, 2000; Noakes, 1998; Scott et al., 2009; Tucker, 2013) to explain this dominance. These varied explanations demonstrate the challenge of identifying one factor that can fully explain this astounding performance by Kenyan athletes. Indeed, multifactorial explanations for the elite Kenyan distance running are more plausible than single factor approaches (Mazrui, 1986; Njororai, 2007a, 2010, 2012, 2016; Santos-Concejero et al., 2015; Scott & Pitsiladis 2006, 2007; Tucker et al., 2015); Wilber & Pitsiladis, 2012).

Indeed, one of the earlier explanations for Kenya's dominance in middle and long-distance running was that runners having a genetic advantage (Entine, 2000; Noakes, 1998). However, discounting the genetic advantage argument, pioneer runners always insist that what it took for them

to succeed at the highest level was hard work in training, a natural and balanced diet, rest and a burning desire to succeed. However, in trying to explain the success of Kenyan runners, many scientists seem to downplay the role of personal ambition and training in favor of living at altitude and having a unique genetic makeup. Indeed, the central thesis in Entine's (2000) argument is that the Kenyan runners and the Black race in general are genetically advantaged. However, research by Scott and Pitsiladis (2006, 2007), Tucker et al., (2015) and Wilber and Pitsiladis (2012) acknowledged that genetic studies have not identified anything unique among Kenyan runners and, therefore, concluded that environmental factors appear more influential than genetics in distance running success. According to Scott and Pitsiladis (2007), "research on the genetics of the African running phenomenon demonstrates that the athletes, although arising from distinct regions of east Africa, do not arise from long-term limited genetic isolate . . . environmental factors appear more influential than genetic in distance running success" (2007, p. 426). This finding, therefore, counters Entine's argument that Kenya athletes only excel because of their unique genetic makeup. Tucker et al. (2015) also argue that attributing Kenyan runners' success to a single gene association with performance are oversimplified for numerous reasons, while at the same time not discounting a role for genetics in explaining the success. In addition, the authors go on to explain that social, environmental, lifestyle, and cultural factors would be expected to exert effects on tribes that are, by definition, tightly geographically and linguistically bound. According to Tucker et al. (2015), research has yet to reveal a gene or even a combination of genes that is conclusively linked to performance, though given complex physiology, the extremely small sample of elite athletes, the limited scope of single-gene-association studies, and the difficulty of finding appropriate controls, this is unsurprising. Therefore, according to Scott and Pitsiladis (2006, 2007), Tucker et al., (2015) and Wilber and Pitsiladis (2012), the complex multifactorial interaction of physiology and environmental factors remain the most accurate current explanation for the observed success. Similar conclusions have been articulated by Santos-Concejero et al. (2015), who argue that being born at altitude and having a physical active lifestyle in childhood has bestowed physiological advantages to the Kenyan runners. This confirms that the environmental forces have influenced the individual athletes' physiological makeup (Santos-Concejero et al., 2015) as well as instilled a desire to escape from poverty hence their unparalleled work ethic in training and competition (Jarvie & Sikes, 2012).

Literature shows that success in sports performance is dependent on various factors. For Kenyan distance running, the following factors are essential: favorable social support, early life active living, training, individual commitment, favorable geographic features including free space and altitude, an appropriate constitutional makeup of the athletes for distance running and some reasonably innate running ability (Noakes, 1998; Wilber & Pitsiladis, 2012). This fits in well with the performance paradigm, which suggests that success in sports is due to harmony of internal and external factors (Njororai, 2003, 2007a, 2016; Singh, 1982). The importance of social and cultural factors is, therefore, critical in translating the innate genetic potential into reality in the competitive arena, especially at the Olympic level where only the best representatives from each country show up to compete for medals. It is important to point out that the pioneer runners in Kenya were disproportionately from the Kalenjin ethnic grouping and this trend continues to date. It is plausible that these early successes and national and international visibility became a key driver of the disproportionate Kalenjin success, where the achievements of runners, like Kiprugut Chumo, Kipchoge Keino, Amos Biwott, Michael Boit, Ben Jipcho and others, from the Kalenjin community helped to drive interest, participation, and dedicated recruitment of runners from the region and community. This initial success, therefore, caused a circle of success that continues to evolve and deepen to present day. This is in line with the common phrase: success breeds success. Hence, subsequent success of Kalenjin runners may have been inspired by the pioneer community members

and continues to inspire further success within the same community, driven by economic and financial incentives that characterize modern professional sports. This has, incidentally, also contributed to the massive number of athletes from Kenya changing national allegiance to run for other countries like Qatar and Bahrain where they are generously compensated financially (Njororai, 2012, 2015, 2016). This modeling of success by athletes is critical in shaping the aspirations of young people closest to them culturally and geographically. A study by Onywera et al. (2006), found that one-third of Kenyan International runners became athletes for economic empowerment. Similarly, Jarvie and Sikes (2012) established that majority of Kenyan women runners declared money as their primary motivation for taking up running (49.2%), followed by role models (22%), significant others (12%), Olympic Games (6%), and to earn athletics scholarship (5.5%). All these are extrinsic rewards for taking up athletics. On the other hand, intrinsic motivations such as running for fitness (3.5%) or fun (1.5%) played minor roles. Indeed, the emphasis on financial rewards for the successful runners in the media continues to fuel interest in running by aspiring young talents in Kenya. According to Tucker et al. (2015), it is not inconceivable that similar success in the various Kalenjin subtribes may have inspired a form of imitation leading to subsequent success and the observed increased likelihood of certain groups' success.

According to the Performance Factors Model, key internal factors for athletic success include: constitution (genetics/physique), athletic condition because of hard training, desire to succeed mirrored in a psychological framework due to upbringing and modeling and individual technique and tactics due to training and coaching (Njororai, 2007a, 2016; Phillips et al., 2010). External factors that could have lent a hand include: a political climate of peace and stability at national level, an educational system that provides room for sports training and competition from the grass-root to the international level, a widespread running infrastructure as well as recognition of pioneer runners as role models, success in international competitions, coaching, local and national competition structure, external funding for training, exposure and travel opportunities, environmental conditions ideal for training at altitude and lack of automation, which allow for more physical activity. The combination of one's genetic make-up is only a foundation upon which success can be built through hard work. A lot of potentially good athletes, and even players in disciplines like soccer, have retired at high school because they never had the burning desire and the patience to work towards the accomplishment of set goals (Njororai, 2007b).

The Performance Factors Model, therefore, goes beyond the dualistic historical debate on the relative influence of genes (nature) (Entine, 2000) and environment (nurture) (Scott & Pitsiladis, 2006, 2007), which has characterized the academic interest in Kenya's success in distance running, which often ignore the interactive nature of both genetics and the environment. Researchers, such as Davids and Baker (2007) and Phillips et al. (2010), discount the dualistic positions of nature and nurture on sports performance and, instead, advocate for a dynamical system theory as a multidisciplinary theoretical rationale, which argues that multiple interacting constraints shape the development of elite performers. According to Phillips et al. (2010), genetic diversity may be responsible for a small part of training or performance response differences between individuals, and only when there is a favorable interaction with vital environmental constraints are performance benefits observed. Thus, elite level performance of an individual must be understood at the level of individual interactions with key environmental and task constraints. The authors go on to state what many African athletes have argued, that the acquisition of expertise is domain specific and involves adaptation to performance environments through satisfying unique constraints that impinge on each developing expert. Expertise acquisition emphasizes the changing nature of the performer-environment relationship through development, and gaining experience through training, practice, coaching and competing (Phillips et al., 2010).

According to Larsen (2003), training is a key component in facilitating elite runners to run at top speeds while maintaining high levels of economy and utilizing their Maximum Oxygen Uptake or VO (2max). According to him, critical physiological factors for performance in running are maximal oxygen consumption (VO (2max)), fractional VO (2max) utilization and running economy. According to his research findings, Kenyan and Caucasian elite runners can reach very high, but similar maximal oxygen uptake levels, compared to the VO (2max) of Black South African elite runners, seems to be slightly lower. Further investigation showed that Black South African runners can sustain the highest fraction of VO (2max) compared to their white counterparts during long distance running. A similar research on adolescent Kenyan and Caucasian boys show that these boys are running at a similar percentage of VO (2max) during competition. One fundamental finding on Kenyan elite runners was the fact that they were able to run at a high % of VO (2max), which must then have been achieved by training. According to Larsen (2003), a lower energy cost of running has been demonstrated in Kenyan elite runners and in untrained adolescent Kenyan boys compared to their Caucasian counterparts. In agreement to this are the results from studies on Black South African elite runners who have shown similar low energy costs during running as the Kenyan elite runners. Larsen's (2003) conclusion that the good running economy cannot be explained by differences in muscle fiber type as they are the same in Kenyan and Caucasian runners, makes a lot of sense. The same is true when comparing untrained adolescent Kenyan boys with their Caucasian counterparts. However, one unique feature of Kenyan distance runners is their body physique. Larsen (2003), therefore, argues that a difference exists in BMI and body shape, and the Kenyans' long, slender legs could be advantageous when running as the energy cost when running is a function of leg mass. But of significance is the Kenyan athletes' response to training given their unique physique and exposure to rigorous training. Studies comparing the response to training of Kenyans and Caucasians have shown similar trainability with respect to VO (2max), running economy and oxidative enzymes. In conclusion, it appears that running at a high fractional VO (2max) and having a good running economy may be the primary factors favoring the good performance of endurance athletes rather than them having a higher VO (2max) than other elite runners. But most significantly, having the proper genes to shape their bodies and thereby contributing to a good running economy, the Kenyan elite runners have trained effectively and used their potential to be in the upper range both regarding VO (2max) and to a high utilization of this capacity during endurance running. But behind all the training is the motivation and desire to apply themselves to be successful on the track and in life. Therefore, a positive interaction between nature and nurture coupled with an individual's ambition to escape poverty and lead a good life, ability and attitude are keys to the success of Kenyan distance running phenomenon.

Conclusion

Kenya has excelled at the summer Olympic Games by specializing and harnessing her potential in track and field for over five decades. The events in which Kenyans have been outstanding include the middle and distance running. To date, Kenya has won 104 Medals at the Olympic Games with 97 (93.27%) being in athletics and the remaining 07 (6.73%) from boxing. Out of the 97 won in athletics, 91 (93.81%) were in middle and distance events. Additionally, women have won 24 (24.74%) medals compared to 73 (75.26%) won by the men in track and field. In 2016 Rio Olympic Games, the Kenyan women won 7 medals compared to 6 won by the men. This kind of success shows the need for sustained diversification in the events where Kenya can win medals. From the analysis, there is room for improvement in sprints, hurdles and throws as Kenya has won some medals albeit on a sporadic basis. Although the anthropometric, anthropological, physiological, psychological, political economy, and sociocultural basis for the rise and dominance of Kenyan

distance runners at the Olympic Games have been the subject of research and opinion in both the scientific literature and the lay media for a long time, no single factor can explain the success. According to Tucker et al. (2015), the complex physiology that underpins running performance is multifactorial, so the rise and subsequent disproportionate success of a relatively small population is unlikely to be explained by any single factor. These authors continue to argue that simplified or extreme positions that attribute success to either environment and lifestyle or genes and physiology are thus futile and incomplete. However, the successful performance of the Kenyan middle and distance runners at the Olympic Games is a product of dynamic interactions between genetic makeup of the athletes and an enabling environment leading to elite performance. Thus, the Kenyan runners have capitalized on their innate ability, which interacts with their ambition and work ethic, as well as an enabling sociopolitical environment to excel in distance running to the envy of countries with a better economic foundation. This same success can and should be replicated for all the other sporting disciplines in Kenya and around the African continent. Additionally, Kenya needs to nurture and sustain a more favorable socioeconomic and political environment for athletes to thrive locally to avoid the temptation of going to run for other countries as has been the case in the last 20 years.

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Recent papers in Track and Field Athletics. Papers. People. An Examination of Youth Athletes Performance Indicators In Terms Of Chronological Age And Biological Maturity. The purpose of this study was to examine differences and relationships between selected anthropometric features and performance variables of youth athletes in terms of chronological age and biological maturity. Overall the study provides an insight into the development and success of Australian Track and Field athletes who competed at the Olympic Games or World Championships between 1956 and 2013. Save to Library. Download. This article previews the 2016 Rio Olympics Men's Pole Vault event, with a focus on the favorite to win gold, Renaud Lavillenie. Save to Library. Download. Economic Impacts of Olympic Games: The analysis of four case studies. Bachelor Thesis for Obtaining the Degree Bachelor of Business Administration Tourism and Hospitality Management. Submitted to Irem Ander. A bid to host a mega-event such as the Olympic Games is placed several years in advance to the actual event (PWC, 2004) and the reason behind this is evident. Sometimes significant and expensive changes in infrastructure need to be done in the city at hand. For all reasons mentioned above what can be observed in regard to the placed bids is that the figures and objectives, as well as expected results tend to be manipulated and show over-estimations (Malfas et al., 2004; Matheson, 2008; Kaspar, 2014). Track and field is a sport which includes athletic contests established on the skills of running, jumping, and throwing. The name is derived from where the sport takes place, a running track and a grass field for the throwing and some of the jumping events. Track and field is categorized under the umbrella sport of athletics, which also includes road running, cross country running, and racewalking.