ISSN: 2349 - 4891

International
Journal of Recent Research and Applied Studies
(Multidisciplinary Open Access Refereed e-Journal)

Ethiopia in World Athletics

Dr.S.Jayaraman

Assistant Professor, Department of Sports Science, Adigrat University, Ethiopia.

Received 1st April 2016, Accepted 1st June 2016

Abstract

The purpose of this paper is to explore the way in which the known country Ethiopia dominates and shines in the long distance context. It's a well known fact that Ethiopians fixed the foot path strongly in distance races especially Long in International arena. The country has its own unique nature to produce the best runners in Olympics, World Championships, World Cross country races and other International events too. The training environment has its own demographic and biological merits viz. an elevation of 2000 meters above from sea level, obviously which favors for endurance athletes and the morphology of athletes are gifted by birth itself. The existing country produces many Olympians like Abebe Bikila, Mamo Wolde, Derartu Tulu, Fatuma Roba, Haile Gebre Selassie, Kenenisa Bekele, Muruts Yifter, Tirunesh Dibaba and many more. In Ethiopia, long Distance was introduced in the year 1946. Since 1990s, the globe observes the rise of North and East African runners in long distance events which witnessed the birth of a new rising star in the field of long distance running. Kenyan and Ethiopian athletes, in particular, have since remained dominant in these events. Many factors have been proposed to explain the extraordinary success of the Kenyan and Ethiopian distance runners are predetermined physiology, genetics, nutritional aspects, strong morphological factors, well balanced psychological set up, scattered talents and most importantly an urge to boost their economic background. The journey of success of Ethiopia will break the record of 10+25= 45 and this would be uncountable for the forthcoming events.

Keywords: Ethiopia, Athletics, success, Talent, Distance running.

Introduction

It's a well known fact that Ethiopians fixed the foot path strongly in distance races especially long in International arena. The country has its own unique nature to produce the best runners in Olympics, World Championships, World Cross country races and other International events too. The training environment has its own demographic and biological merits viz. an elevation of 2000 meters above from sea level, obviously which favors for endurance athletes and the morphology of athletes are gifted by birth itself. The existing country produces many Olympians like Abebe Bikila, Mamo Wolde, Derartu Tulu, Fatuma Roba, Haile Gebre Selassie, Kenenisa Bekele, Muruts Yifter**,** Tirunesh Dibaba and many more. In Ethiopia, long Distance was introduced in the year 1946. Since 1990s, the globe observes the rise of North and East African runners in long distance events which witnessed the birth of a new rising star in the field of long distance running**.** Kenyan and Ethiopian athletes, in particular, have since remained dominant in these events. Many factors have been proposed to explain the extraordinary success of the Kenyan and Ethiopian distance runners are

Correspondence
Dr.S.Jayaraman
E-mail: dr.jayramcoach@gmail.com

predetermined physiology, genetics, nutritional aspects, strong morphological factors, well balanced psychological set up, scattered talents and most importantly an urge to boost their economic background. The journey of success of Ethiopia will break the record of 10+25= 45 and this would be uncountable for the forthcoming events.

Rise of Ethiopia in International Events

Long distance event introduced in the year 1946.In Ethiopia Long Distance was introduced in the year 1946-1949(1940-1941 EC).It was first played in the Tefari Mekonnen and Haileslase secondary schools was introduces by physical Education teachers those comes from Canada . After the mid of 1940s in less organized system athletics participants participates in governmental organization, military camps, and air forces, polices forces etc…,peoples were participates in athletics in Ethiopia . Beginning of 1950s Athletics more popular in most primary and secondary schools of Addis Ababa, inter school competition which was held every year during that time (Ethiopian Olympic committee, 2000).

In the modern era of Athletics in Ethiopia after the member of IOC in 1948 participate in Melbourne Olympic number of athletes was developed in Ethiopia especially in the military camps. The foundations of Ethiopia Athletics Federation Ethiopia in 1953 were registered member of International Amateur Athletics

Federation (IAAF) and participated in deferent International competitions (Ethiopian Olympic committee, 2000).

The legendary Abebe Bikila gave humanity lasting images of triumph, humbleness and victory. Abebe Bikila (the Bare Feet King) got first Olympic marathon gold by barefoot. Miruts' earned his country Ethiopia two gold medals at the Moscow Olympics in 1980 in the 5000 and 10000 meter races. This unusual burst of energy that gave him victory after victory earned him the nick-name "Miruts the Shifter".

There is the Lion himself-Haile Gebre Selassie (also known as Emperor Gabe by his fans around the world). Ethiopian calls him"Jegnaw"(Fearless Hero). As the legend continues, Kenenisa Bekele seems poised to take Ethiopian athletics and dominance in long distance running to newer heights.

Ethiopia in world Athletics

Downfall of European countries

Most of the champions have come from the highlands of Arsi-South Eastern part of Ethiopia as well as the vicinities of the capital – Addis Ababa (IAAF, 2010). In the 1980s, the international scene of medium- and long-distance running changed dramatically. Nearly all running events were dominated by European athletes.

During 1980s, European dominated in these events 50% and only 30% were from Africa.

- 1990 on words, the percentage of European runners has fallen to 11%
- African runners has jumped to 85%
- Kenyans are dominated 55%
- 90% of world record by these two countries (Ethiopia & Kenya)
- Top 10 positions of the world holds by Kenya and Ethiopia

(Rodrigo Luiz Vancini and et. al., Open Access J Sports Med. 2014; 5: 123–127)

The loss of supremacy by the European runners is not caused by their decreasing running speed. The reality is that the African runners are running faster and faster yet the years are moving. What makes the African runners, particularly Kenyans and Ethiopians, the best in the world?

Nature and Nurture

Many factors have been identified as having an influence on success in distance running. The observation of significant relationships between VO_2 max, the fraction of slow twitch fibers and the fraction of VO_2 max which can be utilized and running economy has implicated these factors, and a number of others, as being associated with success in distance running (Costill et al., 1976; Daniels, 1974; Rusko et al., 1978).

Running events from the middle distances (800-10,000 m) to long distances (half- and full-marathon) are dominated by East African black runners (Noakes, 2002; Noakes, 2000; Saltin, 1995). These populations may have a genotypic or phenotypic advantage when it comes to endurance running; several investigators have searched for phenotypic differences between black and white endurance athletes from South Africa, Kenya, and Eritrea (Bosch et al., 1990; Coetzer et al., 1993; Lucia et al., 2006; Saltin, 1995; Weston et al., 2000).

Two studies indicated that black runners ran at a higher percentage of their maximum oxygen consumption (VO_2 max) during either a simulated treadmill marathon (Bosch et al., 1990) (higher percentage of their VO_2 max-marathon) or at a 10-km race pace (Weston et al., 2000). While there are many possible combinations that might lead to elite performance in endurance events, it appears that extremely high values for VO_2 max and outstanding running economy are rarely seen in the same person (Daniels, 1974; Saltin, 2003; Joyner & Coyle, 2007). East African runners do not have exceptional high values for VO_2 max or lactate threshold, but generally have outstanding running economy (Billat et al., 2003; Larsen, 2003; Noakes, 2002; Saltin et al., 1955).

In general, sports performance requires the integrated combination of many intrinsic (genetic, biological, etc), and extrinsic factors (exposure to the stimulus, environment, nutrition, technical-tactical training techniques, sport specialization, competition, socio-cultural and financial aspects, motivation, career management, scientific support, etc). Some of these are trainable (physiological, psychological, and biomechanical) and some are taught (technical and tactical), while others are beyond the control of athletes

and coaches, such as chronological age and genetic factors. In fact, it has long been suggested that genetic background plays an important role in sporting potential, being responsible for determining the anthropometric, cardiovascular, and muscular characteristics of adaptation to physical training.

Several factors in the complex interaction between genotype and phenotype have been proposed to explain the particular success of African runners, or the "African runners' phenomenon", including:

- Genetic predisposition;
- High maximum oxygen uptake (VO_2max) values;
- Highest concentration of hemoglobin;
- Relatively high hematocrit;
- Good metabolic efficiency (based on somato type characteristics);
- Favorable muscle fiber composition;
- Profile of oxidative enzymes;
- The traditional Kenyan/Ethiopian diet;
- Constant altitude training; and
- Motivation to urge economic success and social mobility.

(Rodrigo Luiz Vancini and et. al., Open Access J Sports Med. 2014; 5: 123–127. Published online 2014 May 20. doi: 10.2147/OAJSM.S61361)

It does not mean that the constant altitude, genetic type and food alone give better result for this country. Naturally, the athlete himself physically, mentally, socially strong enough to obtain any sort of resistance in order to boost their economic set up in the society.

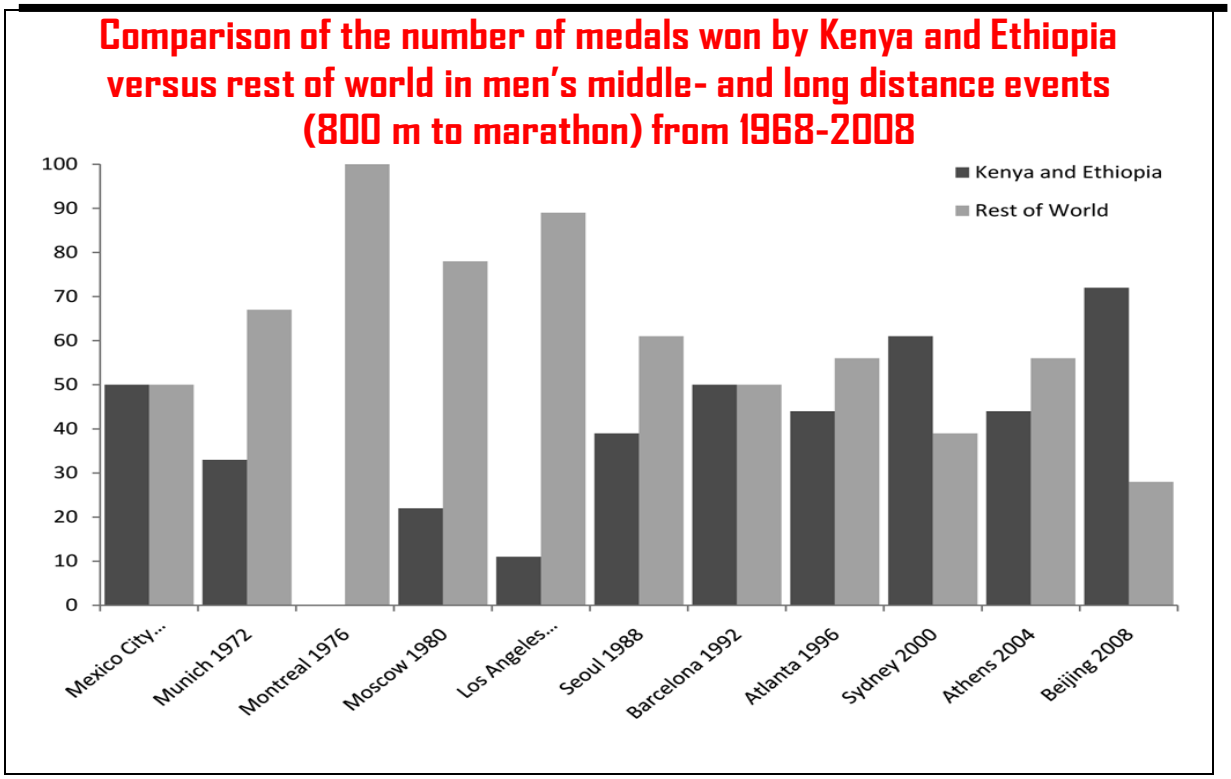


Figure I. Medal Talley of Ethiopia and Kenya since 1968 Olympics.

Adopted from (**Randall L. Wilber and Yannis P. Pitsiladis,** *International Journal of Sports Physiology and Performance*, 2012, 7, 92-102 © 2012 Human Kinetics, Inc.**)**

Table I. The medal tally of Ethiopia and Kenya at London, 2012

2012 Olympic Results		
	Ethiopia	Kenya
No. of Medals	**3+1+3=7**	**2+4+5=11**

Source: https://en.wikipedia.org/wiki/2012_Summer_Olympics_medal table.

Figure II. The Bare foot Champion from Ethiopia in 1960 – He completed marathon with barefoot and this image was at 1964 Olympics

Figure III. Miruts Yifter known for brilliant sprinting speed. Won 5000m& 10000m gold at 1980 Moscow Olympics. Out of 252, who won 221 gold at International events

Figure IV. The greatest of all: Haile Gebrselassie, seeing here in his junior days

Figure V. Everlasting distance runners of Ethiopia

Figure VI. Kenenisa Bekele the successor of Haile

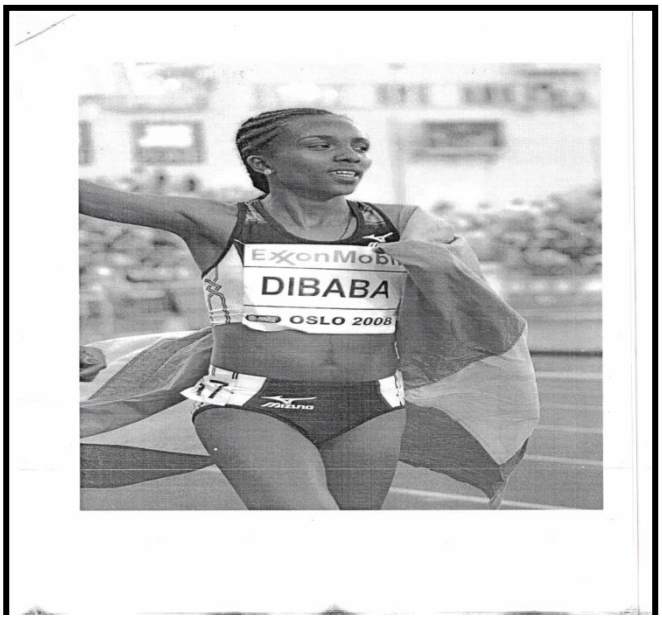


Figure VII. Tirunesh Dibaba - Gold in World Championship at the age of 17

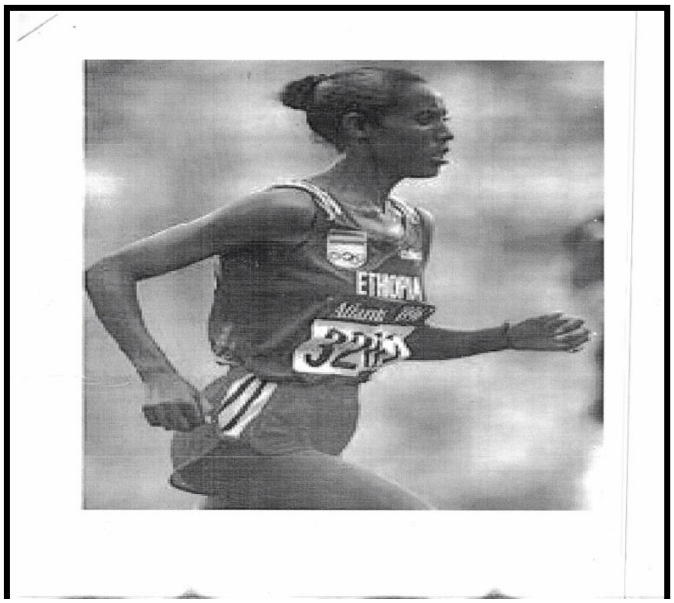


Figure IX. Fatuma Roba The first Marathon medal ever wins by African Women

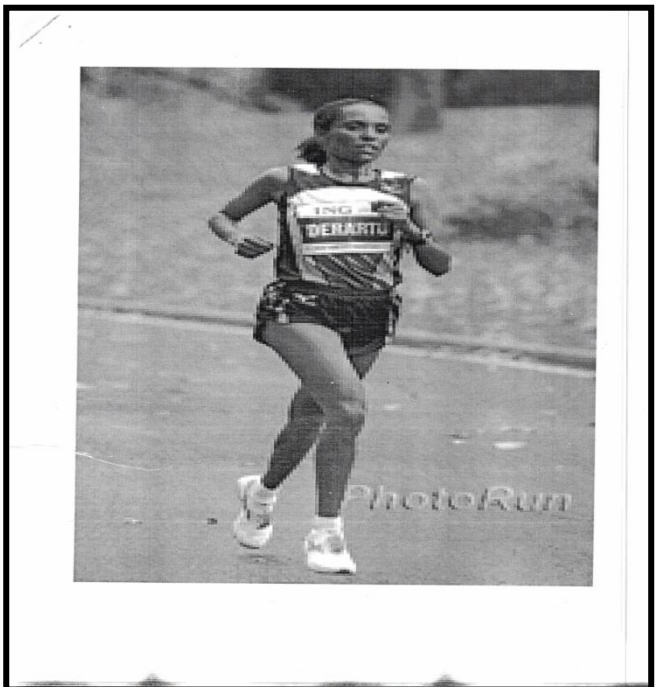


Figure VIII. Derartu Tulu - The first black African to win Olympic Medal 1992- Gold (10000), 1996- Silver, 2000- Silver 2004- Bronze

Figure X. Haile Gebrselassie (Champion of Champions)
27 times - World Record
4 Times - Indoor World Record
5 Times – Outdoor World Record

Figure XI. Genzebe Dibaba celebrates her new world record in the 1500 meters women event at the IAAF Diamond League Herculis meeting at the Louis II Stadium in Monaco, July 17, 2015. (http://www.reuters.com/article/us-athletics-diamond-record-idUSKCN0PR27F201507170)

Nature of Ethiopia

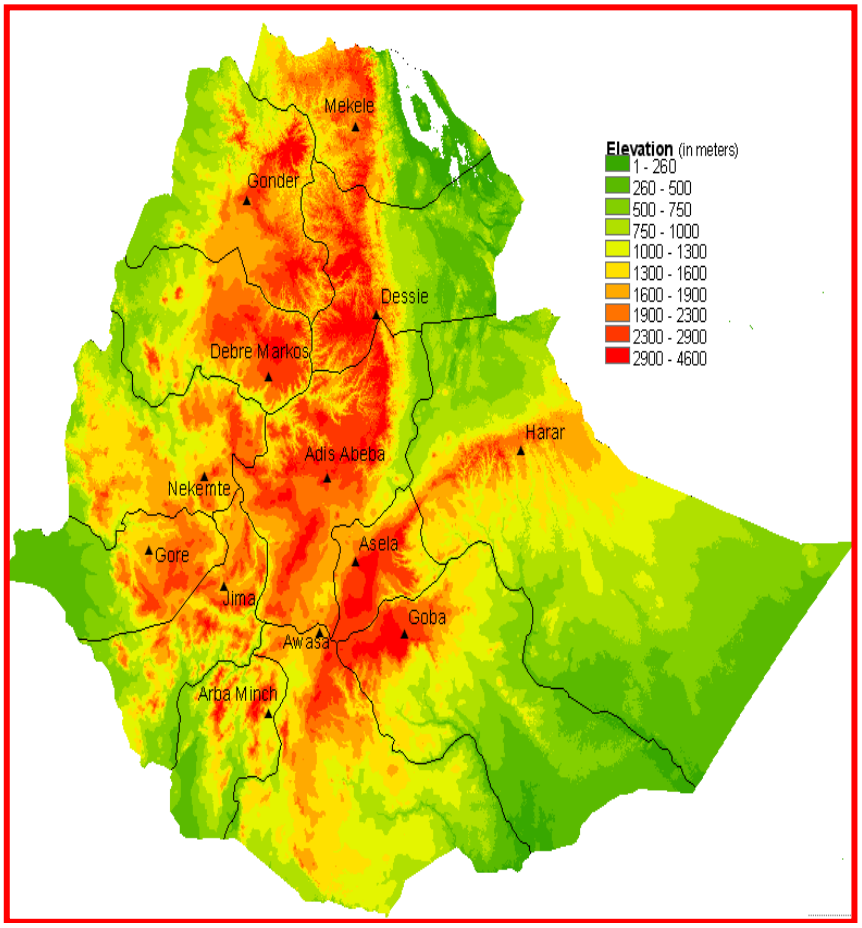


Figure XII. Elevation of Ethiopia (Live high- Train high)

Most of the places of Ethiopia are highlands in nature. It is a gifted land especially athletes live and trains at and above 2000mts above from sea level. Obviously, athletes are physiologically influenced and gained Vo_2 max and etc.. 38% of the Ethiopian Olympian have come "Arsi" region which only makes up less than 5% of the total Ethiopian population. (Scott.R et.al, Intl.Sp.Med.Journal, Vol.7.No.3, 2006). It is 2355 m above from sea level which Locates in Rift Valley. The Second best place is Shewa Tribal Region which is also a highland. (Randall L.Wiber and Yannis P.Pitsiladis Intl J Spo Physio & Performance, 2012)

Climatic Conditions too Favor

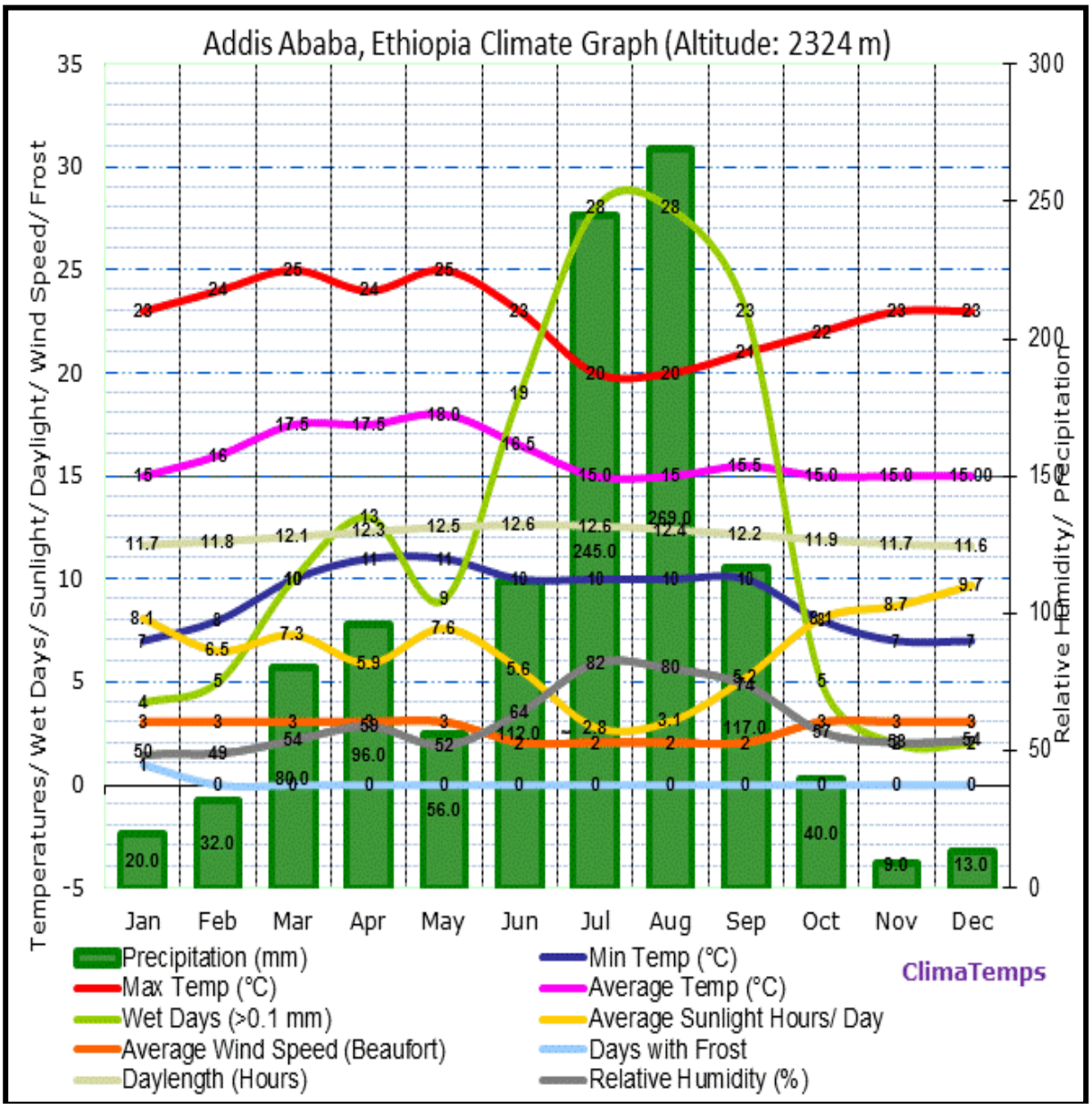


Figure XIII. The average climatic condition of Ethiopia

Ethiopians diet ("INJERA" rich in carbohydrate)

Figure XIV. Rich in Iron and Carbs

The common food contains carbohydrate 64%, Protein 13% and Fat- 23%. They are font of meats especially sheep and Ox. The athletes consume supplementary. Their favorite drink is Chai without milk after training and which is the energy drink for post training. (Beis and et.al. J Int Soc Sports Nutr. 2011; 8:7) Barley is the favorite drink of Haile (Olympic Champion).

Teff is rich in a number of essential vitamins, including many from the vitamin B group and vitamins A and K. A one-quarter-cup serving of teff has almost 0.2 milligrams of thiamin, 0.13 milligrams of riboflavin, 1.6 milligrams of niacin and 0.2 milligrams of vitamin B-6. It also has 4 international units of vitamin A and 0.9 micrograms of vitamin K. Members of the vitamin B complex provide support for your immune system, and help you process carbohydrates into glucose. Vitamin A is essential for eye health, as well as being a natural antioxidant, protecting your body from damage from free radicals, created when your body digests food or encounters environmental toxins, such as exhaust fumes. Toxins and free radicals can cause cell damage and death, increasing your risk of heart disease and cancer. Vitamin K is known as the clotting vitamin, essential for blood coagulation. (www.infomoby.et)

Morphological Traits (Somato Type)

The athletes are meso morphic in nature. They are muscular in nature and the circumference of thigh is high and their skin is quite soft and tiny. Ethiopian athletes have good mechanical efficiency and economy of movement. The athletes are high in phenomenon of finishing the race at high speed and it is the highlights of these athletes.

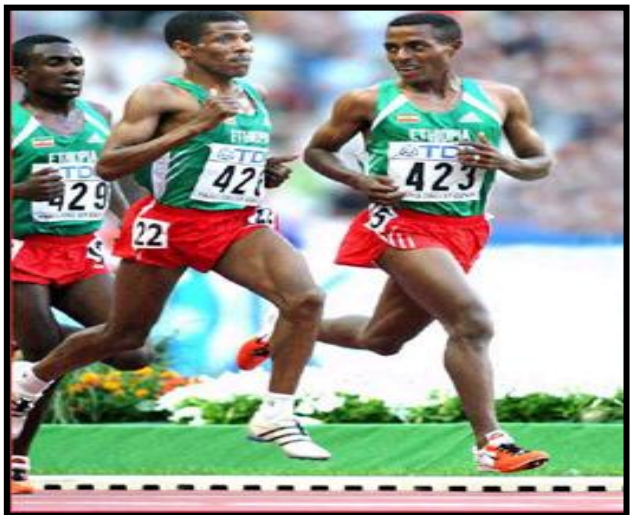


Figure XV. Morphology of athletes

Walking machine

The lifestyles in Ethiopia are quite tough. The mode of transport is on foot. They trust their foot than vehicles. Even the public normally walks 6-8 km for water and it's even quite long when they move to Market day where they can get cheap all the commodities. Obviously, the school going students covers the distance of normally 8-10 km by foot. Even Haile, the Olympic Champion covers the distance of 20 km by walking and running in order to be on time for school.

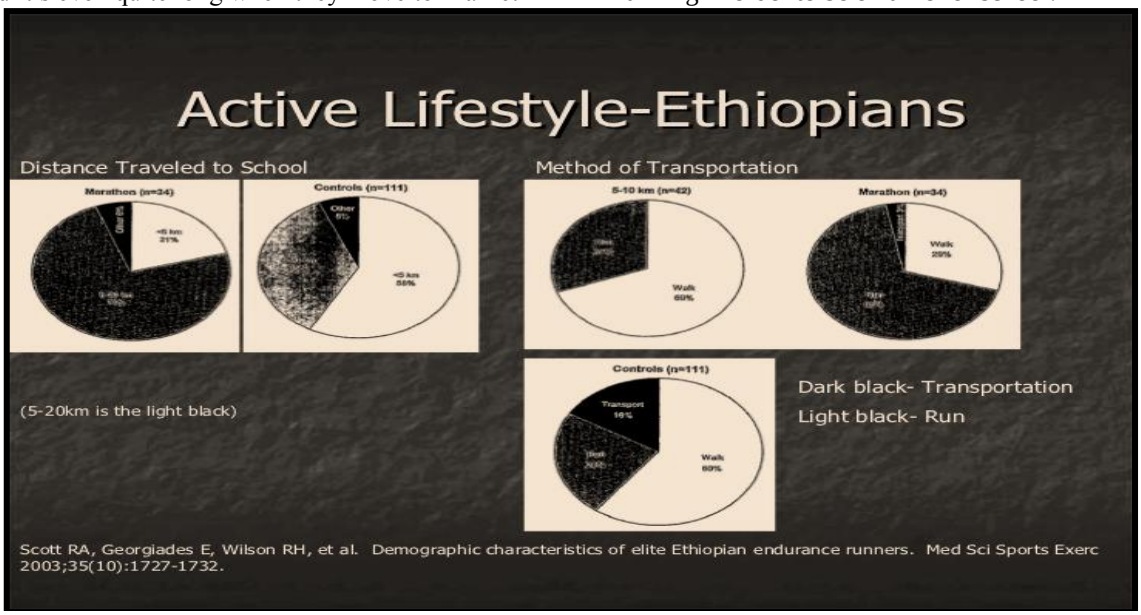
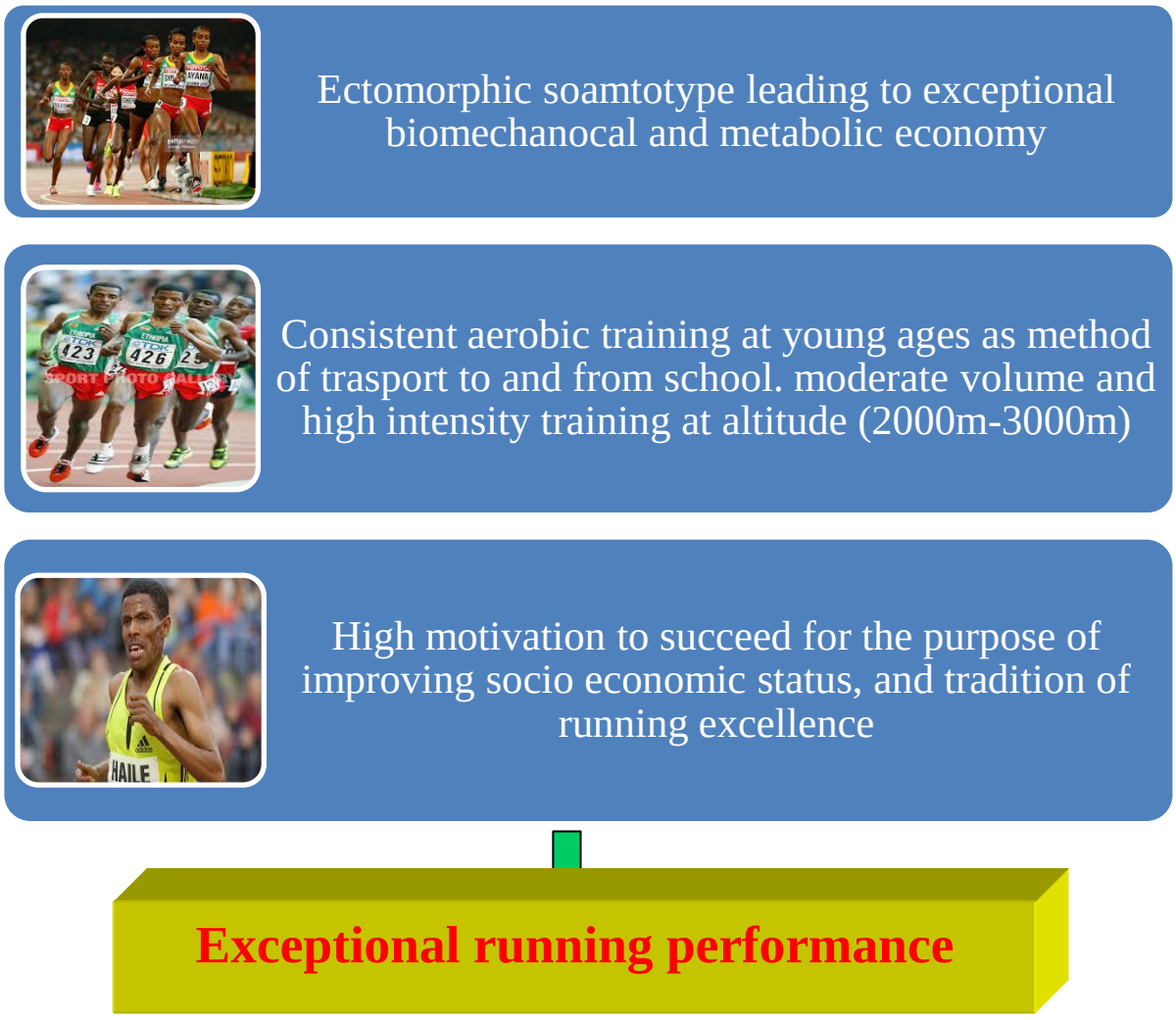


Figure XVI. Life style of Ethiopia towards mode of transportation

According to the study of Saltin, in terms of regional distribution, there was a significant excess of athletes, particularly marathoners from the Arsi and Shewa Regions of Ethiopia. 73% of marathon runner hailed from one of these two regions, compared with 43% of 5-10 kms runners, 29% of track and field athletes and just 15 % of controls. To put these figures in the context, Arsi is the smallest of Ethiopia's 13 regions, accounting for less than 5% of the total population. In terms of distance travel to school, the marathon athletes differed significantly from all other groups. 73% of marathoners travelled more than 5k to school each day, compared with 32-40% of the other groups. And marathoners were much more likely to run to school each day that the other groups (68% v16-31 %.).



Wilber and Pitsiladis models to explain the dominance of Ethiopian and Kenyans in distance races.

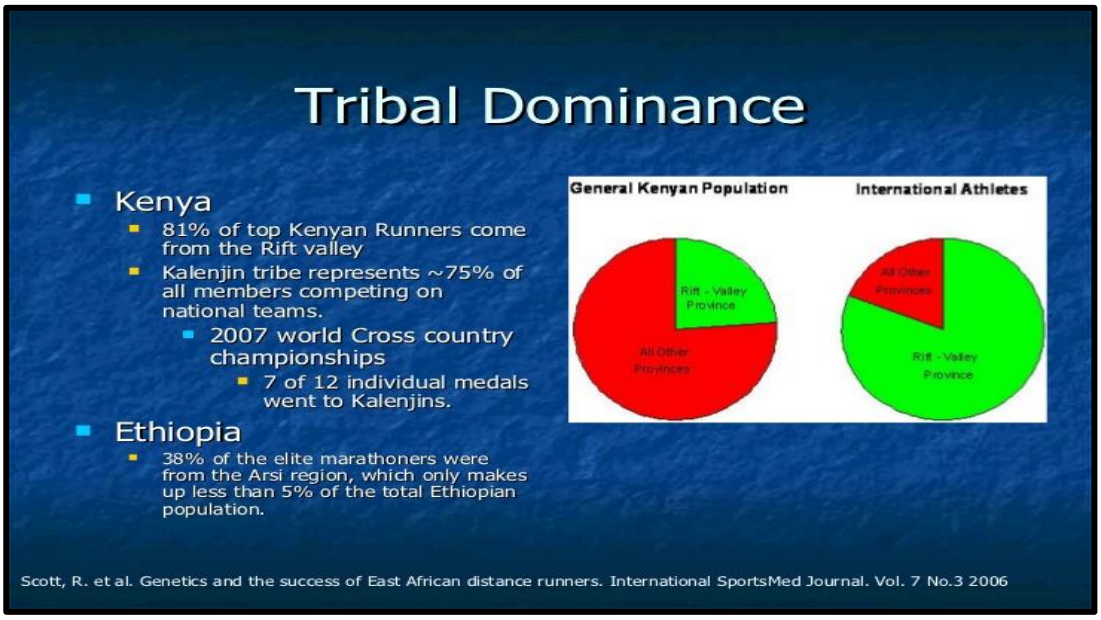


Figure XVII. The contribution of tribes towards National team Building

Success behind the success

Wilber RL and Pitsiladis YP , (2012) several factors have been proposed to explain the extraordinary success of the Kenyan and Ethiopian distance runners, including (1) genetic predisposition, (2) development of a high maximal oxygen uptake as a result of extensive walking and running at an early age, (3) relatively high hemoglobin and hematocrit, (4) development of good metabolic "economy/efficiency" based on somato type and lower limb characteristics, (5) favorable skeletal-muscle-fiber composition and oxidative enzyme profile, (6) traditional Kenyan/Ethiopian diet, (7) living and training at altitude, and (8) motivation to achieve economic success.

Working culture

The land Ethiopia has unique of working in nature. Their main portfolio is agriculture. The people are font of working in nature. They do the work for longer period of time without break and even without food. They are mostly working conscious. A very hard working, sincere, trust and very discipline at work. They are rough and tough and it's not easy task to win them physically. Because they are little aggressive, mental toughness and like a ambivert character.

Figure XVIII. Working conditions of People

Social and Psychological Traits

The society is meant for fun and enjoyment and it's fully follows by European culture. The people are mentally strong enough, physically fit and physiologically boost up by nature and socially well being. But the drawback of this people is women tend to work more rather men. Their economic background also another challenges for this people. The female

participation in sports is relatively low and the latest trend is their contributions are more in order to rise up their social and economic status.

Challenges and constraints

These athletes face lot of challenges to succeed. The factors are;

1. Lack of financial aspects.
2. Believes on traditional form of training
3. Low economic status
4. Insufficient job opportunity and unemployment
5. Insecure life
6. Behind in advanced training systems and methods
7. Less scope to participate in Intl. competitions.
8. Unhealthy lifestyle
9. Constant famine and drought
10. Lack of awareness of female athletes

The recent approaches to training

Knowingly or unknowingly, the climatic conditions favor for them in order to boost up their performance to compete with other countries. The for most advantage for the distance athletes are live high and train high. This is most applicable in all the places of Ethiopia. The traditional and national foods too help them in a row of achieving high in Vo2 max and other physiological benefits. The gifted topographic and morphological factors are influenced high in their prolonged effective long away, running efficiency and good metabolic set up by gene.

Table 2. Achievements of Ethiopia in International Competitions

Games/ Championships	Gold	Silver	Bronze	Total
	21	8	16	45
	20	18	17	55
	19	14	15	48
	8	13	7	28
	10	11	1	22
	5	2	3	10
	4	4	3	11
	2	4	3	9
	5	4	-	9

Total	237

Table III. International Medalists
Below is a list of Ethiopian medalists in major championships and the Olympic Games.

Olympic Games	
Gold	
Abebe Bikila	Marathon- Rome'60 and Marathon- Tokyo'64
Mamo Wolde	Marathon- Mexico City' 68
Miruts Yifter	5000m and 10000m- Moscow'80
Derartu Tulu	10000m- Barcelona'92 and 10000m- Sydney'2000
Fatuma Roba	Marathon- Atlanta'96
Haile Gebrselassie	10000m- Atlanta'92 and 10000m- Sydney'2000
Million Wolde	5000m- Sydney'2000
Gezhagne Abera	Marathon- Sydney'2000
Kenenisa Bekele	10000m- Athens'2004
Meseret Defar	5000m- Athens'2004
Kenenisa Bekele	5000m & 10000m-Beijing'2008
Tirunesh Dibaba	5000m & 10000m-Beijing'2008
Meseret Defar	5000m , London'2012
Tirunesh Dibaba	10000m, London'2012
Tiki Gelena	Marathon, London'2012
Silver	
Mamo Wolde	10000m- Mexico City'1968
Gete Wami	10000m- Sydney'2000
Sileshi Sihine	10000m- Athens'2004
Ejegayehou Dibaba	10000m- Athens'2004
Kenenisa Bekele	5000m- Athens'2004
Sileshi Sihine	10000m-Beijing' 2008
Dejen Gebremeskal	5000m, London'2012
Bronze	
Miruts Yifter	10000m- Munich'72
Mamo Wolde	Marathon- Munich'1972
Eshetu Tura	3000m Steeplechase- Moscow'80
Addis Abebe	10000m- Barcelona'92
Fita Bayissa	5000m- Barcelona'92
Gete Wami	10000m- Atlanta'96
Gete Wami	5000m- Sydney'2000
Tesfaye Tola	Marathon- Sydney'2000
Assefa Mezgebu	10000m- Sydney'2000
Derartu Tulu	10000m- Athens'2004
Tirunesh Dibaba	5000m- Athens'2004
Tsegay Kebede	Marathon, Beijing'2008
Meseret Defar	5000m,Beijing'2008
Tariku Bekele	10000m,London'2012
Tirunesh Dibaba	5000m, London'2012
Sofia Assefa	3000m steeplechase, London'2012

Table IV. Medals at IAAF World Championships

Gold	

Haile Gebrselassie	10000m- Stuttgart'93, Gothenburg'95, Sevilla'97, Athens'99
Gete Wami	10000m- Athens'99
Derartu Tulu	10000m- Edmonton 2001
Gezhagne Abera	Marathon- Edmonton 2001
Tirunesh Dibaba	5000m- Paris 2003, Helsinki 2005; 10000m- Helsinki 2005
Berhane Adere	10000m- Paris 2003
Kenenisa Bekele	10000m- Paris 2003; Helsinki ,2005
Kenenisa Bekele	10000m,Osaka, 2007
Meseret Defar	5000m, Osaka,2007
Tirunesh Dibaba	10000m, Osaka,2007
Kenenisa Bekele	5000m, Berlin ,2009'
Kenenisa Bekele	10000M, Berlin, 2009
Mohammed Aman	800m, Moscow, 2013
Meseret Defar	5000m, Moscow,2013
Tirunesh Dibaba	10000m, Moscow, 2013
Genzebe Dibaba	1500m, Beijing,2015
Almaz Ayana	5000m , Beijing, 2015
Silver	
Wedajo Bulti	Marathon- Helsinki'83
Fita Bayissa	5000m- Tokyo'91
Haile Gebrselassie	5000m- Stuttgart'93; 10000m- Paris 2003
Derartu Tulu	10000m- Gothenburg'95
Berhane Adere	10000m- Edmonton 2001, Helsinki 2005
Werknesh Kidane	10000m- Paris 2003
Sileshi Sihine	5000m and 10000m- Helsinki 2005
Meseret Defar	5000m- Helsinki 2005
Ibrahim Jeilan	10000m, Daegu, 2011
Sileshi Sihine	10000m,Osaka,2007
Deresse Mekonnen	1500m, Berlin 2009
Meselech Melkamu	10000m , Berlin, 2009
Hagos Gebrhiwet	5000m, Moscow, 2013
Ibrahim Jeilan	10000m, Moscow, 2013
Lelisa Desisa	Marathon, Moscow, 2013
Yemane Tsegay	Marathon, Beijing, 2015
Senbere Teferi	5000m, Beijing,2015
Gelete Burka	10000m, Beijing, 2015
Bronze	
Haile Gebrselassie	10000m- Edmonton'2001
Kutre Dulecha	1500m- Athens 1999
Ayelech Worku	5000m- Edmonton 2001
Million Wolde	5000m- Edmonton 2001
Sileshi Sihine	10000m- Paris 2003
Ejegayehou Dibaba	5000m and 10000m- Helsinki 2005
Tsegaye Kebede	Marathon, Berlin, 2009
Meseret Defar	5000m, , Berlin, 2009
Wude Ayalew	10000m, Berlin, 2009
Aselefech Mergia	Marathon, Berlin, 2009
Dejen Gebremeskel	5000m, Daegu,2011
Imane Merga	10000, Daegu,2011
Feyisa Lilesa	Marathon, Daegu,2011
Meseret Defar	5000m ,Daegu, 2011
Genzebe Dibaba	Marathon, Moscow,2013

Almaz Ayana	5000m, Mosocw,2013
Belaynesh Oljira	10000m, Moscow,2013
Sofia Assefa	Steeplechase, Moscow,2013
Hagos Gebrhiwet	5000m, Beijing, 2015
Genzebe Dibaba	5000m, Beijing,2015

Table V. Total Medals Since 1983- 2015 at IAAF World Championships

Rank	Nation	Gold	Silver	Bronze	Total
7	Ethiopia	25	22	25	72

Conclusion

Elite sporting performance results from the combination of innumerable factors, which interact with one another in a poorly understood but complex manner to mould a talented athlete into a champion. Within the field of sports science, elite is understood to be the result of both genotypic and phenotypic factors.

10  **+25**  **= 45** 

Acknowledgement

Acknowledge to Ethiopian Athletics Federation and Ethiopian Olympic Committee.

References

1. Archive of Past Events. IAAF. Retrieved on 2013-09-08.
2. Costill, D. L., Fink, W. J., & Pollock, M. L. (1976). Muscle fiber com- position and enzyme activities of elite distance runners. *Medical Science Sports, 8,* 96-100.
3. Daniels, J. (1974). Physiological characteristics of champion male athletes. *Res Q, 45,* 342-348.
4. "First World Outdoor Championships in Helsinki a landmark for track & field." Usatf.org. Retrieved 2012-07-23.
5. IAAF World Championships in Athletics. GBR Athletics. Retrieved on 2013-09-08.
6. Rusko, H., Havu, M., & Karvinen, E. (1978). Aerobic performance capacity in athletes. *European Journal of Applied Physiology and Occupational Physiology, 20,* 151-159.
7. Wilber and Pitsiladis YP. "Kenyan and Ethiopian distance runners: what makes them so good?" Intl J Sports Physiol Perform, 2012 June;7(2): 92-102
8. http://www.pass4-sure.us/HP2-E58-dumps.html.
9. http://www.mybraindumps.net/70-640.html.
10. http://www.checkpoint.com/.
11. http://www.test-king.com/exams/JN0-633.htm.
12. http://www.actualtests.com/exam-70-246.htm
13. http://www.iaaf.org/athletes/jamaica/usain-bolt-184599#honours
14. https://en.wikipedia.org/wiki/IAAF_World Championships in Athletics)
15. https://en.wikipedia.org/wiki/2012 Summer Olympics medal table.