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Identify Factors that Affect Distance Runner Performance in the Case of Debre Berhan, Addis Abeba and Arsi Zone Asela Bekoji, Ethiopia

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Abstract
Athletics does not need expensive equipment to starting which makes simple and one of the most commonly competed sports in the world. Debre Berhan and around DebreBerhan, Arsi zone Asela Bekoji and around Asela Bekoji, Addis Ababa and around Addis Ababa was study area. Identifyfactors that affect distance runner performance in the case of Debre Berhan, Addis Ababa and Arsi Zone Asela Bekoji.Questionnaire, interview with focus group discussion, observation checklist and document analysis was data collection technique and descriptive and binary logistic regression analysis was applied.The odds ratios indicate that distance runner performance whose level of primary education were have about 5.796 high chance to Reading and writing when compared to those level of education 10 or 12 certificates (coeff -1.637, OR 0.195, P=.004, CI 0.063, 0.600).When come to the body mass index 41 (23.3%) the athletes somatic type nature significantly tell us underweight condition which affects distance runner performance.Athletes required continuous follow up and stakeholders support to continuity of field of distance running because many times athletes stop at project level before arrived peak performance.
Keywords: Running Economy, Maximal Oxygen Uptake, practice, challenges, opportunities and the runnersperformance

Introduction

Athletics is an exclusive collection of sporting events that involves competitive events like walking, running, jumping, and throwing. The most common types of athletics competition are track and field, road running, cross country running and race walking. The person who engages in these activities is known as athlete. Unlike other sports, athletics does not need expensive equipment to starting which makes simple and one of the most commonly competed sports in the world. In other words, athletics is one of the purest of all sports, relying solely on the strengths of the human machine or human body rather than sophisticated technological implements to improve performance. In line with this view, (Brain, 2013) contend, that "Games played in a country can tell us a lot, how people in the particular country live with sport", noted on (Abera, 2013).

Unsurprisingly, when observed about sport and Ethiopia, relatively few but world finest distance runners just come to our mind. Hence, the New York Times called Ethiopia is the "running Mucca," due to its historical successes in the athletics program, it took 5th place in the world ranking late alone during the Olympic champion at Beijing Olympic 2008, International Olympic committee (IOC, 2010), noted on (Abera, 2013). The result shown, justifiably come to an agreement that Ethiopia has some of the best middle and long distance runners in the world.

Meanwhile, the two African countries, Ethiopia and Kenya, held over 90% of all-time world records and 8 of the current top-10 positions in the world event rankings by middle- and long-distance running (Michael Bushel, 2012): Why are Kenyan and Ethiopian distance runners so good? Typically, the rationale behind their achievement lays on that the practice of this event requires remarkably little facilities, having a door-openers' or 'a role models', an engagement with manual work at the early age, for instance, long distance round-trip to school, fetching water and gathering fire wood, could be mention as some of the main factors (Tsehaynew, 2010), noted on (Abera, 2013). Ethiopia's most accomplished runners tend to hail from the Shewa and Arsi zones (Bekoji andAselatown), while Kenya's best are usually producing from Nandi County. All these terrains findalong the steep edges of the Great Rift Valley, at elevations of 6,500 feet (1981 meter) or more.Therefore, identifying the best practice andopportunities that works in Bekoji, however it is not significantly outsource the potential of North Shewa Zone, including the neighborhood district ofDebre Berhan town.

Thus, the study will try to distinguishthemajorfactors that hinderrunner athletes around North Showa Zone Basona Worena Woreda(around Debre Berhantown), Angolalla and Tara (Chacha town), Mendida and Sheno in comparison to Arsi zone Asela particularly Bekojitown.

Statement of the problem

Currently, athletics is one of the most popular games that are practiced in all nation of the world. In the competition it is simple no need of expensive equipment makes athletics popular all over the world. Athletics is a dynamic sport that needs understanding the quality of training and solving problems of competent performance in a frequent changing world. Although Ethiopia is well known, its current world position in athletics is 'inconsistent' e.g.

particularly the South Korea, Ethiopian athletes performance reduction in the experience of competition. Opening modern athletics training center and widening national athletic competition has significant contribution to improve the current Ethiopian athletics sport. Hence, it is important to widen the potential areas of athletes at least to keep its current position for many years by increasing the number and its quality athletes.

To saying this, the research is probably the first attempt to investigate the athletes environmental, genetic predisposition, feeding habits, and geo-demographic and socio economic status and cultural divergent that hinder Debre Berhan, Addis Ababa and Arsi zone Asela Bekoji.

Objectives

General objective: assessing factors that affect distance runner performance in the case ofDebre Berhan, Addis Ababaand Arsi Zone Asela Bekoji.

Specific objectives

- To assess the practice of distance runner performance in all Debre Berhan, Addis Ababa and Arsi Zone Asela Bekoji
- To assess the challenges of distance runner performance in all Debre Berhan, Addis Ababa and Arsi Zone Asela Bekoji
- To assess the opportunities of distance runner performance in all Debre Berhan, Addis Ababa and Arsi Zone Asela Bekoji
- To identify the major variables that hinder Debre Berhan athletes relative to Arsi Zone Asela Bekoji and Addis Ababa

Materials and Methods

This research is proposed to distinguish basicvariables that enhance athletic performance associated to develop strong athletes with particular emphasis onDebre Berhan, Addis Ababa and Arsi Zone Asela Bekoji practices, challenges and opportunities to improve holistically our country distance runners performance thus, the study alleviates and intervene how Debre Berhan become as additional source of athlete development to fulfill national agenda.

The researcher's conducts with non-probability(purposive and convenience) sampling technique and within these,probability sampling (simple random, stratifying and cluster)technique was adopted.Descriptive and binary logistic regression analysis with respects to comparative tetra lateral approaches and followed both quantitative and qualitative methods.

The driving force for conducting this research is to assess the environmental status, weather condition, genetic predisposition, feeding habit, demographic status, training system, socio- economic and cultural divergence that make all town (Arsi zone-Asela Bekoji, Debre Berhan and Addis Ababa) differ in producing athletes. For this effect, the data collection is perusing both descriptive and inferential statistics were employedwith certain successive statistical procedures and principles. Firstly, quantitative data will be analyzed using various feature of statistical package SPSSversion 16, by using descriptive statistics:frequency, percentage, graphs, binary logestic regression and correlation. And then the data collected through interview, and observation will be analyzed qualitatively by combining with compatible questioners. Finally the documents were qualitatively analyzed according to the procedure of research tools.

Result and Discussion

Results

As the findings of the data displayed below in the table Debre Berhan and around Debre Berhan 29 (20.0%), Asela Bekoji and around Asela Bekoji 56 (38.6%) and Addis Ababa and around Addis Ababa 60 (41.4%) have significantly the practice of distance running based on this the researchers conclude that selected study areas are respectively appropriate for distance runner and the weather condition significantly correlated with distance running performance.

On top of this families socioeconomic status from the respondents replied yes response 136 (98.8%) significantly contribute on distance runners performance inclination and declination based on this the researchers conclude that families support and distance running performance have significant correlation

As the findings of the data displayed below athletes and coach employing biological recovery from the respondents replied yes response 109 (75.2%) significantly contribute on distance runners performance progression in average 51(35.2%) as the said respondents approved (15-20 minutes) for warming up and in average 63 (43.4%) as the said respondents approved (10-15 minutes) for cool down beyond to main session based on this the researchers conclude that natural recovery process. As the findings of the data displayed higher than the respondents replied there is a potential of performance 99 (68.3%) response significantly indicate having distance runners performance.

Table 1 Predictor variables by cross tab

Variable	Category	Frequency	Percent	Crosstab Sig.
Level of distance running training institution	Project	41	28.3	0.01*
	Center	57	39.3	
	Academy	16	11.0	
	Club	31	21.4	
Sex of the respondent	Male	87	60.0	0.094
	Female	58	40.0	
Level of education	Reading and writing	33	22.8	0.046*
	Having primary education	38	26.2	
	Having 10 or 12 certificate	61	42.1	
	Having diploma and above	13	9.0	
Religion	Orthodox	128	88.3	0.367
	Muslim	6	4.1	
	Protestant	5	3.4	
	Others	6	4.1	
Marital status	Single	141	97.2	0.003*
	Married	4	2.8	
Type of weather condition	Cold	68	46.9	0.000*
	Warm	60	41.4	
	Hot	17	11.7	
Families economic source	Farmer	96	66.2	0.482
	Trade	31	21.4	
	Employee	18	12.4	
Motivation factor from Coaching styles of the coach	Autocrat coaching style	11	7.6	0.561
	Democrat coaching style	119	82.1	
	Casual/lazy coaching style	15	10.3	
The scope of the study area	Debre Berhan and around Debre Berhan	29	20.0	0.000*
	Asela-Bekoji and around Asela Bekoji	56	38.6	
	Addis Ababa and around Addis Ababa	60	41.4	
Socio economic characteristics	No	9	6.2	0.020*
	Yes	136	93.8	
Use biological recovery	No	36	24.8	0.000*
	Yes	109	75.2	
Distance runner performance	There is less performance	46	31.7	***
	There is performance	99	68.3	
Body mass index (BMI)	< 18 (Under Weight)	41	28.3	0.023*
	18—24.9(Normal)	102	70.3	
	25—29.9 (Over Weight)	2	1.4	
	30—39.9 (Obese)	0	0	
	≥ 40 (Sever Obese)	0	0	
Nutritional value	Not know exact Nutrition	109	75.2	0.557
	Know exact Nutrition	36	24.8	
Starting age of athletics	Early childhood (6-9 years)	2	1.4	0.726
	Middle childhood (10-12 years)	16	11.0	
	Late childhood (13-16 years)	88	60.7	
	17 and above	39	26.9	
Warming up session	10-15 minutes	42	29.0	0.009*
	15-20 minutes	51	35.2	
	20- 25 minutes	25	17.2	
	25-30 minutes	27	18.6	
Main session of fitness unit	40-50 minutes	28	19.3	0.128
	50- 60 minutes	32	22.1	
	60-70 minutes	39	26.9	
	Any other	46	31.7	
Main session of technique unit	40-50 minutes	59	40.7	0.230
	50- 60 minutes	38	26.2	
	60-70 minutes	16	11.0	
	Any other	32	22.1	
Cool down session	5-10 minutes	51	35.2	0.044*
	10-15 minutes	63	43.4	
	Any other	31	21.4	

Figure 1shows that the potential of athletes related to athletics institutionand level of distance running trainee's residence

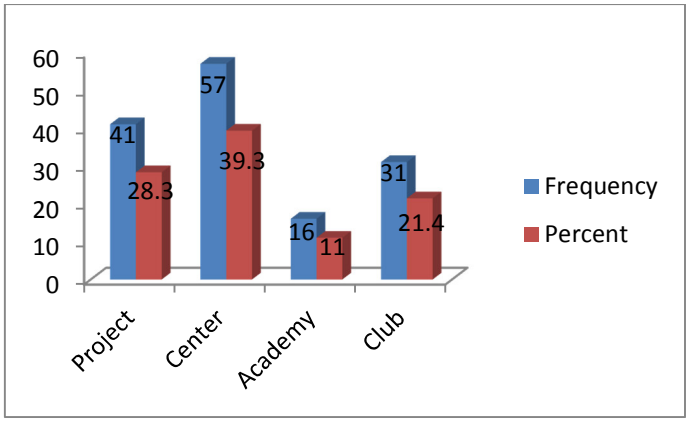
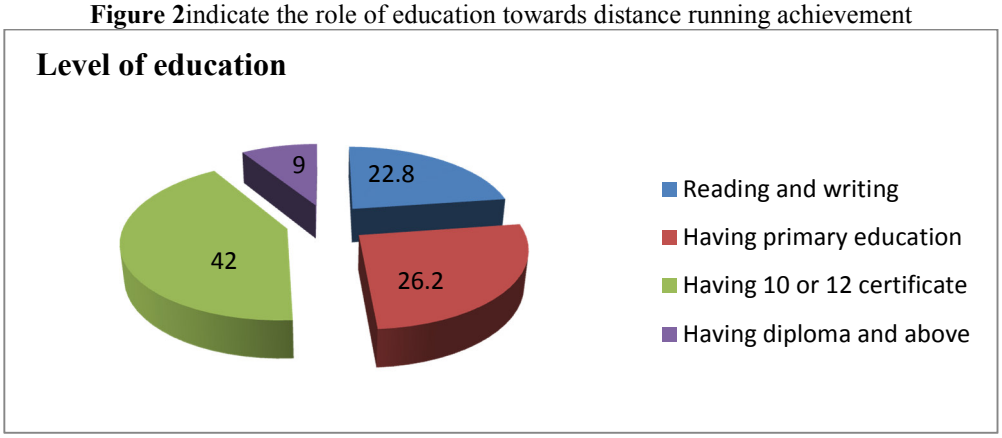


Figure 2indicate the role of education towards distance running achievement



Marital status

As the findings of the data displayed above 141 (97.2%) marital status significantly affect the performance of distance runners on top of this the researchers conclude that athlete's single status and distance running performance significantly correlated

Figure 3refer to the athletes training environment related to weather condition

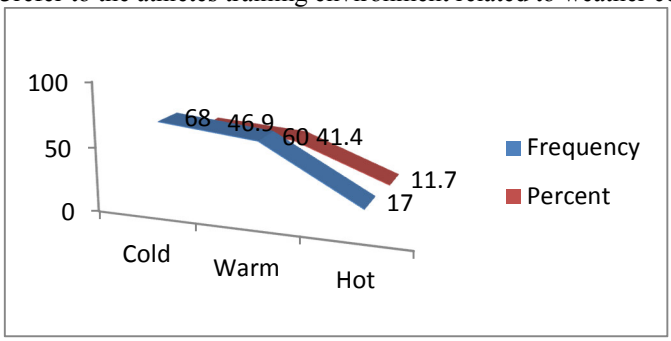


Figure 4 tells us body type or somatic type of athlete's

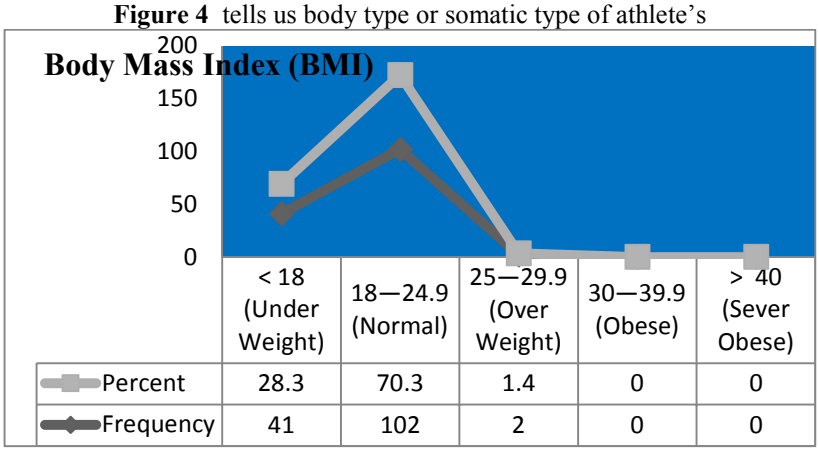


Figure 5 Understanding of athletes nutritionlevel

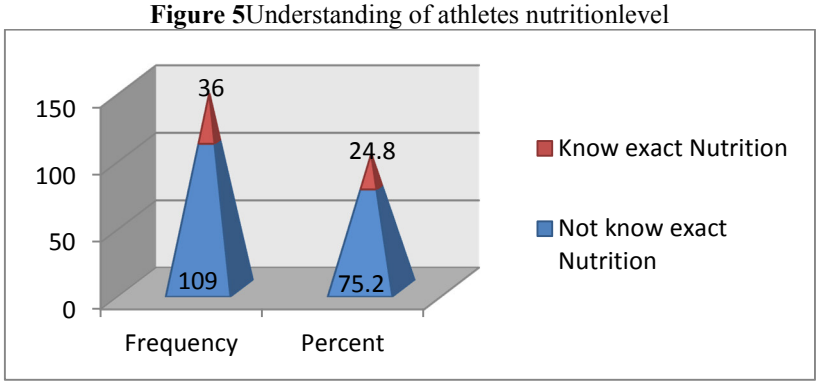


Table 2 Predictor variablesby modeling

Predictor Variables	$\hat{\beta}$	S.E ($\hat{\beta}$)	Wald	Df.	P-value	Exp. ($\hat{\beta}$)	95 % C.I. for Exp($\hat{\beta}$)	
							Lower	Upper
Constant	-3.123	.836	13.942	1	.000*	.044		
Data collection area			14.260	3	.001*			
Project (Ref)								
Center	.802	.399	4.030	1	.022*	2.229	1.019	4.877
Academy	.875	.383	5.226	1	.001*	2.398	1.133	5.077
Club	.384	.509	.569	1	0.451	1.468	.542	3.977
Level of education			20.820	3	.001*			
Reading and writing (Ref)								
Primary education	1.757	.512	11.772	1	.000*	5.796	2.124	15.814
10 or 12 certificate	-1.637	.574	8.128	1	.004*	.195	.063	.600
Diploma and above	.360	.621	.337	1	0.562	1.434	.425	4.842
Environment or Area			40.002	2	.000*			
Debre Berhan and Around Debre Berhan (Ref)								
Asela-Bekoji and Around Asela-Bekoji	-1.933	.515	14.063	1	.000*	.145	.053	.397
Addis Ababa and Around Addis Ababa	.803	.576	1.945	1	0.163	2.232	.722	6.895
Biological Recovery								
No (Ref)								
Yes	.868	.406	4.584	1	.008*	2.383	1.076	5.276
BMI			7.926	4	.019*			
< 18 (Under Weight) (Ref)								
18—24.9 (Normal)	1.049	.398	6.937	1	.000*	2.853	1.308	6.226
25—29.9 (Over Weight)	-1.270	.483	6.920	1	.001	.281	.109	.723
30—39.9 (Obese)	.913	.286	10.167	1	.002	2.491	1.421	4.365
≥ 40 (Sever Obese)	1.639	.543	9.115	1	.093	5.152	1.777	14.935
Warming up session			19.434	4	.000*			
10-15 minutes (Ref)								
15-20 minutes	-1.174	.515	5.195	1	.001*	.309	.113	.848
20- 25 minutes	.100	.306	.106	1	.000*	1.105	.606	2.014
25-30 minutes	.497	.318	2.433	1	.023*	1.643	.880	3.067
Any other	-1.712	.640	7.157	1	.062	.181	.051	.633

* Significant (P-value < 0.05), Df: Degree of freedom, ref: reference category

Discussion

Since all significant predictor variables are categorical, the value of the Wald statistic and the odds ratios for each category with their respective probabilities (P-value) are given in table 2Here to interpret the odds ratios, the first category was used as a reference group.

Since the probability of the Wald statistic for each of the above 6 variables was less than the level of significance 0.05, we mainly focus on the categories of these variables. Thus, one can interpret the effects of each covariate using the estimated odds ratio given in table 2. The Level of education of athletics was found to have significant impact on the distance runner performance. This covariate has four categories: Reading and writing (Ref), Primary education, 10 or 12 certificates, Diploma and above. Here, the reference category contains distance runner performance of athletics. The odds ratios indicate that distance runner performance whose level of primary education were have about 5.796 high chance to Reading and writingwhen compared to those level of education 10 or 12 certificates (coeff -1.637, OR 0.195, P=.004, CI 0.063, 0.600). The odd of level of education is the probability that the subject would performance divided by the probability that the subject would be distance running performance. The probability of the Wald statistic for the covariate environment or area was 0.000, less than the level of significance 0.05. Hence, the null hypothesis that the logit coefficient for Asela-Bekoji and Around Asela-Bekoji or Addis Ababa and Around Addis Ababa was equal to zero was rejected. This supports the relationship that being Asela-Bekoji and around Asela-Bekoji or Addis Ababa and around Addis Ababa of distance running performance was associated with the covariate of athletics performance. And the value of Exp (β) was 0.145 or 2.232 which implied that the odds of being at performance of athletics who area in Asela-Bekoji and around Asela-Bekoji or Addis Ababa and around Addis Ababa was 0.145 or 2.232 times more likely than those area in Debre Berhan and aroundDebre Berhan respectively. This might be due to the fact that environment of different area had different training whether condition.

For biological recovery, the positive sign for the logit coefficient of the covariate indicated that athletics performance was higher for those distance runner who had biological recovery than those who had not. The odds ratio (odds ratio=2.383) for this variable indicated that the odds of being at distance running performance who had biological recovery was 2.383 more likely than those subjects who had no use biological recovery.

The probability of the Wald statisticfor the independent variable of body mass index of distance running performance (P-value of 0.019) was greater than the level of significance 0.05. Consequently, the null hypothesis that the logit coefficient for this covariate was equal to zero was rejected. The distance runner performance who would 18—24.9 (Normal) was 2.853 times more likely to be distance runner performance who would < 18 (under weight). This might be due to that athletics performance usually slowly changed over time. But the probability for the covariate of a performance who would above 25—29.9 (over weight) to diagnosis was less than the level of significance 0.05, hence was a great significant impact in the athletics performance.

For the variable warming up session, the magnitude of the odds ratio (odds ratio=0.309) indicates that the odds of being at distance runner performance due to athletics performance whose warming up session of 15-20 minutes was less by 69.1% than the athletics performance whose warming up session was less than warming up session of 10-15 minutes. And also distance runner performance due to athletics performance whose warming up session of any other minutes was less by 81.9% than the athletics performance whose warming up session was less than warming up session of 10-15 minutes.

The results in table 2 also data collection area was 2.229 times higher for those distance runner performancethat were center than those who were project. The Wald criterion also demonstrated that the explanatory variable data collection area complication made a significant contribution to distance runner performance (P-value = 0.001). The magnitude of the odds ratio for this variable expresses that a patient who had pneumonia complication was 2.853 times more likely being at risk of death than those patients without complication. The results of multiple logistic regression analysis in table 2also revealed that the odds of distance runner performance who stayed club by 53.2% than distance runner performance who stayed project.

Conclusion and recommendation

When came to the summary part which is formulated from result and discussion properly appreciatethe raised variables in the following manner such as level of distance running training institution, sex of the respondent athletes, level of trainees education, religion, marital status, type of weather condition, families economic source, motivation factor from coaching styles of the coach, the scope of the study area practice, socio economic characteristics, the practice of biological recovery, performance,body mass index (BMI), nutritional value, starting age of athletics and each training session such as warming up unit, main (fitness and skill) unit and cool down unitare among the factors which affect distance runner performance based on these detail the following major findings drawn as a conclusion.

Conclusion

Based on the findings of the aforementioned potential and significant summary variables wereaddressed by the researcher concludedin the following manner:

Status of train athletes training ability not passed beyond the project level which implies present discontinuity from athletics and the selection and coaching mechanisms of athletes for training has its own problem missing long term plan like youth athletes. The setup of the sport organization has not qualified human resource such as qualified office experts, losing education and modern coaching science. Level of education when the significant participants not merely passed certificate status which implies most of athletes are not educated. Marital status 141 (97.2%) significantly affect the performance of distance runners on top of this the researchers conclude that single level athletes have advantage and positively correlated with distance running performance.

The weather conditionas the significant respondents responds on the aforementioned figure in the discussion part of chapter four the convenient weather condition of distance runner training practice is trainedand live on cold and intermediate situation which affects distance runner performance because the current science informed us live high and train sea level altitude. When come to the body mass index 41 (23.3%) the athletes somatic type nature significantly tell us underweight condition which affects distance runner performance. Athletes level of understanding about the value of nutrition the significant respondents responding that athletes are not exactly knowing the intake and nutritional value of balanced diet which implies occurring miss balance of energy output and inputdue to these and others the capacity of the coach never to be understand and distinguish all these problems practically in the coaching process. Socioeconomic characteristics significantly contribute on distance runners performance inclination 136 (98.8%) respondents replied yes response on top of this families socioeconomic status and distance running athletes support have significant correlation for athletic performance. As the data displayed athletes and coach employing biological recovery majority of respondents replied yes response 109 (75.2%) significantly contribute on distance runners performance progression in average 51(35.2%) as the said respondents approved (15-20 minutes) for warming up and in average 63 (43.4%) as the said respondents approved (10-15 minutes) for cool down beyond to main session based on this the researchers conclude that natural recovery process such as obtained proper training session time like warming up and cool down are very important accordance with proper diet, fluid intake, rest, sport massage theraphy, education, hygiene, sleep, showerand distance running performance have positive significant correlation

Recommendation

Based on the aforementioned drawn conclusion the researcher suggests the following important recommendation: According to interview, focus group discussion and observation for the development of the new era sport professionals such as coach and experts required harmonized qualities both experience and education

- The athletics organization need to have qualified human, physical and material resource including qualified office experts and coach
- The selection and coaching process of athletes for training has working from grassroots with all sources of village, school and project including by operational plan
- The camp need to highly qualified coaches both modern science and experience
- We need to have focus on youth strategic plan and widening the athletics fields
- Athletics required multidisciplinary professionals such as:
- ✓ In all study area athletes required continuous follow up fromall stakeholders avoidance of athletes discontinuityfrom the field of distance running because many times athletes stop at project level before arrived peak performance
- ✓ In all study area athletes required basic education and short term training to be fruitful the field distance running
- ✓ In all study area athletes required professional exercise nutritionist in order to know the expenditure of energy
- ✓ In all study area athletes required professional sport psychologists in order to adviseathletes marital statusand all round life
- ✓ In all study area athletes required professional sport medicine in order to know the prevention and rehabilitation from injury
- ✓ In all study area athletes required professional coach accordance to exercise physiology, sport biomechanics and sport biochemistry deeply understand about the science of altitude training and athletic performance
- ✓ In all study area athletes required professional fitness instructor in order to know the change of training accordance with body mass index
- ✓ In all study area athletes required professional sport sociologists and anthropologists in order to know the spirit and proud of sport nation wide
- Athletics required the participation of all stake holders such as families, professionals, private company owners, NGO and GO via participation of active investment
- The government responsible to update and consolidate the sport policy at system level

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