



Analytical study of tactical style in the stages of race parts and its relationship to the level of the world record in (5000m) run

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Abstract:

Present study aimed to identify the tactical style which using through the stages of the race of 1,000 meters and achievement run 5,000 meters for each register world record, as well as to the tactical style through the stages of the race of (1000m, 2000m, 3000m, 4000m, and final 1000m) and the run completion of 5000m, finally find the speed rates by which can be recorded standard numbers during the coming years in the race of 5,000m run. Methodology of our study depending on the survey method in a manner comparative analytical study on a participates who registered standard world records in running 5000m since 1912 and until the last world record registered in 2004. Researchers concluded that tactical style used to complete parts 5,000m run marked with similar pace among most of the racers when you sign the global recorders, moreover, strategic or tactical style does not depend on 5,000m run at a constant pace, but there are stages of the race was marked by the increasing speed and another stages are with stable rate or decreasing and increasing in the last phase, study also found to find a predictive speed rates for levels of future performance in 5,000m run.

Keyword: Analytical study, tactical style, race parts, 5000m run.

1. Introduction:

Athletic is one of the Games which received considerable media attention in recent years because it has been achieved global achievements proved that human beings has no limits in its physical ability whether by strength or speed or endurance. However, smashed and registration of new world records are achieved today in the speed, strength, and endurance because of scientific and technical development, in the introduction training scientists who have tried to exploit the human energy users theories and ideas of the various pure sciences.

One of the events is long-distance running including the effectiveness of the running (5000m), which is one of the more vital events especially in the countries of the Arab Maghreb after control runners and registered global Olympic numbers such as (Tunisia's runner mohammed gammoudi, Moroccan Said Aouita, Ibrahim Abu Tayeb, Khalid Skah, and finally Hicham El Guerrouj) scoring the golden in 5000m run at the Athens Olympics

(2004), as it is characterized by the effective increase in the voltage used (speed) rate at the beginning of the race and sometimes in the middle of the race as well as the rapid end of speed, which requires a change in the specifications of used intensity. However, in order to achieve the best level of achievement must be taking into consideration the distribution of effort by speed used in the method of the stages of the race, as the distribution effort mainly depends on the physical fitness of each player.

The importance of present study is the role of previous strategy of player to pass other competitions in each stage of racing stages and this need to role of coach to make a good plan so as to help players to know the weak and strong points for each competitor to treat them. The problem of our study is around to analytical of plan and tactical methods followed by racers who recorded or developed world record in 5000m running in order to know the developing of knowledge during those years until the current world record result of the progress of training and tactical methods. Present study aimed to identify the tactical style which using through the stages of the race of 1,000 meters and achievement run 5,000 meters for each register world record, as well as to the tactical style through the stages of the race of (1000m, 2000m, 3000m, 4000m, and final 1000m) and the run completion of 5000m, finally find the speed rates by which can be recorded standard numbers during the coming years in the race of 5,000m run.

2. Methodology:

Methodology of our study depending on the survey method in a manner comparative analytical study on a participates who registered standard world records in running 5000m since 1912 and until the last world record registered in 2004.

2.1 Participate:

Each analytical study of the surveys studies should be to obtain a sample which representative of the original community, the researchers depend on community sample that represent all the qualities of the original, so we selected participates from runners who recorded world records in running of (5000m) since 1912 and until the last world record registered in 2004 (International Association of Athletics Federations).

2.2 Tests:

We depend on times of race parts which mentioned above in addition to extract their speed rate.

3. Results and discussion:

Table (1) shows times of the stages of the race (1000m) and the speed rate in the effectiveness run of (5000m)

Year	1	Speed Average	2	Speed Average	3	Speed Average	4	Speed Average	5	Speed Average
1912	2.45.5	6.04	3.01.5	5.51	2.59.0	5.59	2.54.0	5.75	2.56.6	5.66
1924	2.48.6	5.93	2.54.6	5.73	2.57.1	5.65	2.56.7	5.66	2.51.2	5.84
1932	2.46.5	6.01	2.54.0	5.75	2.55.5	5.70	2.57.5	5.63	2.43.4	6.12
1939	2.46.0	6.02	2.53.0	5.78	2.53.5	5.76	2.52.0	5.81	2.44.3	6.09
1942	2.40.0	6.25	2.47.0	5.99	2.51.5	5.83	2.50.5	5.87	2.49.2	5.91
1954	2.44.0	6.10	2.52.7	5.79	2.47.2	5.98	2.48.4	5.94	2.44.3	6.09
1954	2.41.5	6.19	2.50.1	5.88	2.44.9	6.06	2.53.4	5.77	2.41.7	6.18
1954	2.38.4	6.31	2.52.4	5.80	2.51.8	5.82	2.45.0	6.06	2.43.6	6.11
1955	2.44.0	6.10	2.49.4	5.90	2.49.8	5.89	2.46.4	6.01	2.41.2	6.20
1955	2.42.0	6.17	2.48.0	5.95	2.46.0	6.02	2.50.0	5.88	2.40.8	6.22
1955	2.42.0	6.17	2.46.0	6.02	2.48.0	5.95	2.51.0	5.85	2.33.6	6.51

1956	2.36.0	6.41	2.46.0	6.02	2.47.0	5.99	2.48.0	5.95	2.39.8	6.26
1957	2.37.8	6.34	2.46.5	6.01	2.44.4	6.08	2.44.2	6.09	2.42.1	6.17
1965	2.43.8	6.11	2.43.6	6.11	2.44.4	6.08	2.43.1	6.13	2.39.8	6.26
1965	2.39.5	6.27	2.41.9	6.18	2.48.0	5.95	2.46.1	6.02	2.38.0	6.33
1965	2.39.1	6.29	2.41.3	6.20	2.43.7	6.11	2.44.6	6.08	2.37.0	6.37
1966	2.40.2	6.24	2.36.2	6.40	2.41.0	6.21	2.41.6	6.19	2.37.6	6.35
1972	2.36.6	6.39	2.41.9	6.18	2.41.8	6.18	2.42.3	6.16	2.33.7	6.51
1972	2.33.7	6.51	2.38.3	6.32	2.39.2	6.28	2.44.4	6.08	2.37.4	6.35
1977	2.39.21	6.28	2.39.21	6.28	2.37.51	6.35	2.42.99	6.14	2.33.94	6.50
1978	2.42.00	6.17	2.36.00	6.41	2.39.5	6.27	2.37.00	6.37	2.33.9	6.50
1981	2.38.5	6.31	2.38.5	6.31	2.38.0	6.33	2.38.0	6.33	2.33.2	6.53
1982	2.38.0	6.33	2.34.6	6.47	2.37.6	6.35	2.38.5	6.31	2.31.7	6.59
1985	2.35.14	6.45	2.38.68	6.30	2.37.18	6.36	2.41.16	6.21	2.28.24	6.75
1987	2.35.35	6.44	2.37.68	6.34	2.33.34	6.52	2.39.68	6.26	2.32.34	6.56
1994	2.36.6	6.39	2.37.1	6.37	2.37.2	6.36	2.37.4	6.35	2.28.66	6.72
1995	2.35.2	6.44	2.36.6	6.39	2.35.2	6.44	2.36.2	6.40	2.32.1	6.57
1995	2.34.3	6.48	2.34.7	6.46	2.34.0	6.49	2.31.2	6.61	2.30.2	6.66
1997	2.34.6	6.47	2.32.0	6.58	2.31.6	6.60	2.35.0	6.45	2.28.66	6.72
1997	2.32.7	6.55	2.32.7	6.55	2.31.9	6.58	2.31.21	6.61	2.31.21	6.61
1998	2.34.8	6.46	2.31.6	6.60	2.32.9	6.54	2.32.8	6.54	2.27.3	6.79
2004	2.33.24	6.53	2.32.23	6.57	2.31.87	6.58	2.30.59	6.64	2.29.42	6.69

Table (2) shows times of the different race stages and the speed rate of world records in run of (5000m)

Year	1000m	Speed Average	2000m	Speed Average	3000m	Speed Average	4000m	Speed Average	5000m	Speed Average
1912	2.45.50	6.04	5.47.00	5.76	8.46.00	5.70	11.40.00	5.71	14.36.60	5.70
1924	2.48.60	5.93	5.43.20	5.83	8.40.30	5.77	11.37.00	5.74	14.28.20	5.76
1932	2.46.50	6.01	5.40.50	5.87	8.36.00	5.81	11.33.50	5.77	14.16.60	5.83
1939	2.46.00	6.02	5.39.00	5.90	8.32.50	5.85	11.24.50	5.84	14.08.80	5.89
1942	2.40.00	6.25	5.27.00	6.12	8.18.50	6.02	11.09.00	5.98	13.58.2	5.97
1954	2.44.00	6.10	5.36.70	5.94	8.23.90	5.95	11.12.30	5.95	13.56.60	5.98
1954	2.41.50	6.19	5.31.60	6.03	8.16.50	6.04	11.09.90	5.97	13.51.60	6.01
1954	2.38.40	6.31	5.30.80	6.05	8.22.60	5.97	11.07.60	5.99	13.51.20	6.02
1955	2.44.00	6.10	5.33.40	6.00	8.23.20	5.96	11.09.60	5.97	13.50.80	6.02
1955	2.42.00	6.17	5.30.00	6.06	8.16.00	6.05	11.06.00	6.01	13.46.80	6.05
1955	2.42.00	6.17	5.28.00	6.10	8.16.00	6.05	11.07.00	6.00	13.40.06	6.09
1956	2.36.00	6.41	5.22.00	6.21	8.09.00	6.13	10.57.00	6.09	13.36.80	6.12
1957	2.37.80	6.34	5.24.30	6.17	8.08.70	6.14	10.52.90	6.13	13.35.00	6.13
1965	2.43.80	6.11	5.27.40	6.11	8.11.80	6.10	10.54.90	6.11	13.34.70	6.14
1965	2.39.50	6.27	5.21.40	6.22	8.09.40	6.13	10.55.50	6.10	13.33.50	6.15
1965	2.39.10	6.29	5.20.40	6.24	8.04.10	6.20	10.48.70	6.17	13.25.80	6.21
1966	2.40.20	6.24	5.16.40	6.32	7.57.40	6.28	10.39.00	6.26	13.16.60	6.28
1972	2.36.6	6.39	5.18.50	6.28	8.03.00	6.25	10.45.30	6.22	13.19.00	6.28
1972	2.33.7	6.51	5.12.00	6.41	7.51.20	6.37	10.35.60	6.29	13.13.00	6.31
1977	2.39.21	6.28	5.18.42	6.28	7.55.93	6.30	10.38.92	6.26	13.12.86	6.31
1978	2.42.00	6.17	5.18.00	6.29	7.57.50	6.28	10.34.50	6.30	13.08.4	6.34
1981	2.38.50	6.31	5.17.00	6.31	7.55.00	6.32	10.33.00	6.32	13.06.20	6.36
1982	2.38.00	6.33	5.12.60	6.40	7.50.20	6.38	10.28.70	6.36	13.00.41	6.41
1985	2.35.14	6.45	5.13.82	6.37	7.51.00	6.37	10.32.16	6.33	13.00.40	6.41
1987	2.35.35	6.44	5.13.03	6.39	7.46.37	6.43	10.26.05	6.39	12.58.39	6.42
1994	2.36.60	6.39	5.13.70	6.38	7.50.90	6.37	10.28.30	6.37	12.56.96	6.44
1995	2.35.20	6.44	5.11.80	6.41	7.47.00	6.42	10.23.20	6.42	12.55.30	6.45
1995	2.34.30	6.48	5.09.00	6.47	7.43.00	6.48	10.14.20	6.51	12.44.39	6.54
1997	2.34.60	6.47	5.06.60	6.52	7.38.20	6.55	10.13.20	6.52	12.41.86	6.56

1997	2.32.70	6.55	5.05.40	6.55	7.37.30	6.56	10.08.51	6.57	12.39.74	6.58
1998	2.34.80	6.46	5.06.40	6.53	7.39.30	6.53	10.12.10	6.53	12.39.36	6.58
2004	2.33.24	6.53	5.05.47	6.55	7.37.34	6.56	10.07.93	6.58	12.37.35	6.60

Table (3) shows speed rate of stages of 5000m

Stages	Lesser speed	Larger speed	Mean	SD	Skewness coefficient
First 1000m	5.93	6.55	6.29	0.17	0.32-
Second 1000m	5.51	6.60	6.16	0.29	0.31-
Third 1000m	5.59	6.60	6.15	0.29	0.17-
Fourth 1000m	5.63	6.64	6.13	0.28	0.13
Fifth 1000m	5.66	6.79	6.37	0.28	0.54-
5000m	5.70	6.60	6.22	0.25	0.23-

Table (4) shows the different in speed rate of 5000m race stages

Source	Sum of Squares	DF	Mean Square	F	Sig
Between stages	6188.53	1	6188.53	19806.20	0.000
Error	9.69	31	0.31		

F value was found according to Repeated-measures ANOVA

Table (5) shows LSD of speed rate in stages of 5000m race

Stage	Phase Comparison	Mean Different	Error	Level significance	Significance
First 1000m	Second 1000m	0.125	0.033	0.001	S
	Third 1000m	0.133	0.031	0.000	S
	Fourth 1000m	0.156	0.031	0.000	S
	Fifth 1000m	0.080-	0.034	0.023	S
Second 1000m	Third 1000m	0.008	0.018	0.660	No S
	Fourth 1000m	0.031	0.022	0.164	No S
	Fifth 1000m	0.205-	0.023	0.000	S
Third 1000m	Fourth 1000m	0.023	0.021	0.277	No S
	Fifth 1000m	0.213-	0.022	0.000	S
Fourth 1000m	Fifth 1000m	0.237-	0.029	0.000	S

- Shows results of the direction of the general line of the growth of the record of the stages of 5000m race and general rates in the table (6) and graphical formats (1-2).

Table (6) shows direction of the general line of the growth of the record of the stages of 5000m race and general average

Stages	Stable	Speed average	R2 value
First 1000m	5.8073-	0.0061	0.7038
Second 1000m	17.438-	0.0120	0.8863
Third 1000m	18.062-	0.0123	0.9384
Fourth 1000m	16.187-	0.0113	0.8731
Fifth 1000m	16.326-	0.0115	0.8891
5000m	14.882-	0.0107	0.9713

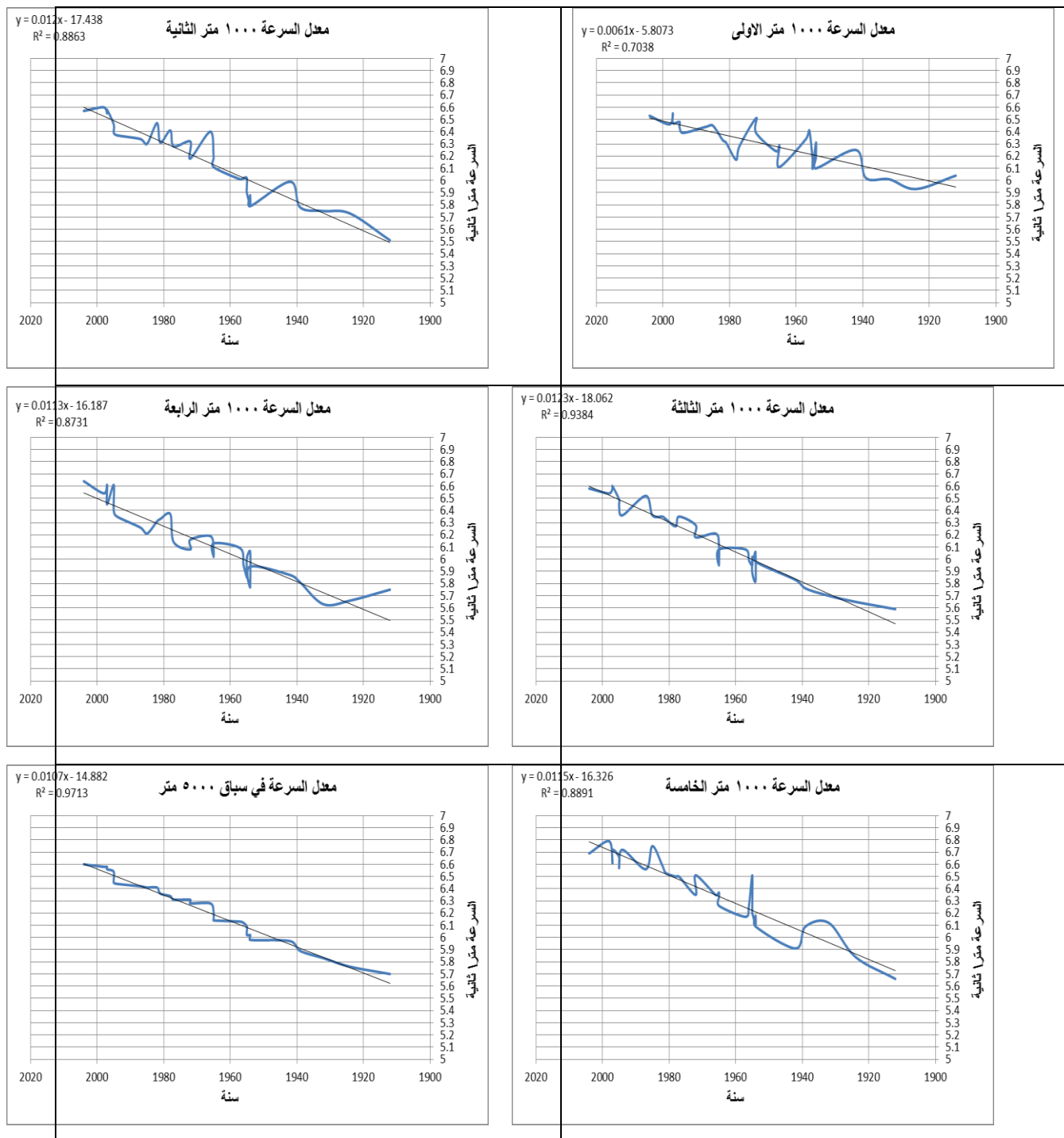


Figure (1) shows direction of the general line of the growth of the record of the stages of 5000m race and general average

Evident from the table (6) and (Figure 1) that the end of the general line whenever increased up means there is a development at a rate of higher speeds as well as the value (R2) is further proof of how important the stage over the years which means players follow one strategy arrived at the finish line over the years, it could also be argued that the growth of the record will continue and notes that the high end of the general line moving with the horizontal line of the number of years and can be expected that the general rate of the speed will increase to (6.73) after it was (6.60) in the year (2004) as the best number. as shown in Figure (2) and table (7).

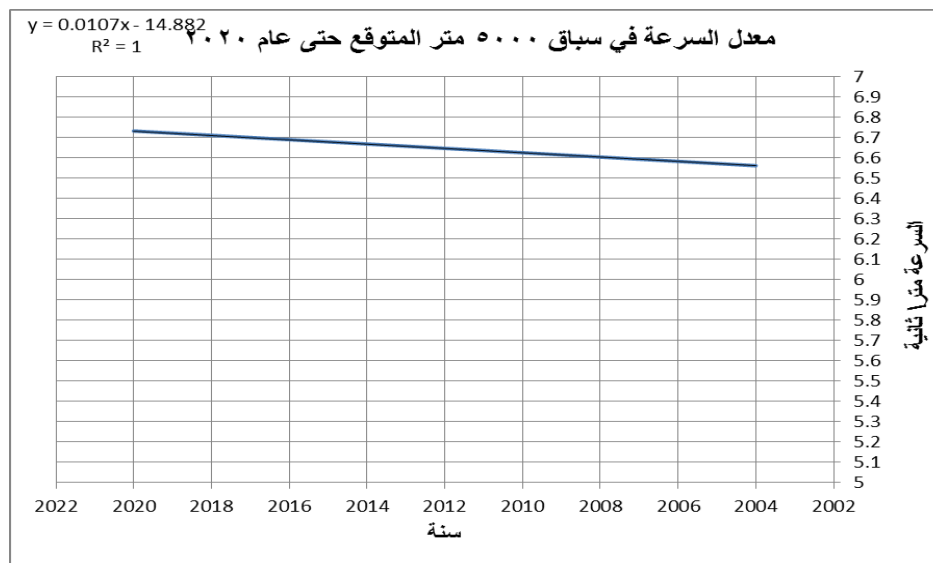


Figure (2) shows prediction in the speed rate by which can be registered records by the coming years in the 5000m race

Table (7) shows prediction in the speed rate by which can be registered records by the coming years in the 5000m race

Year	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Speed rate m/s	6.56	6.58	6.59	6.60	6.61	6.62	6.63	6.64	6.65	6.66	6.67	6.68	6.69	6.71	6.72	6.73

Through analytical parts of race of (5000m) for each (1000m) and for each year in which the world record for this event as in table (1), we can see speed rate of first (1000m) larger than second speed rate (1000m) in years of (1912 to 1965 – 1972 – 1985 – 1994 – 1995 – 2004), it means that tactical style is distinguished oneself with fast start, whereas, tactical style used in years (1978- 1981- 1992- 1997- 1998) distinguished with slowly the first part of (1000m) in speed rate and increased speed rate at second part of (1000m) when compare them with mentioned years.

The rate of speed of the second part demonstrated to be slower than the speed rate of part three of (1000m) in the years (1912- 1954- 1955- 1957- 1977- 1985- 1987- 1995- 1997- 2004), while the speed rate of the second part was faster than the third part in other years under study, the third part of (1000m) distinguished at a faster speed rate when compared with the fourth (1000m) in the years (1932- 1954- 1955- 1956- 1957- 1965- 1966- 1972-

1977- 1981 to 1982- 1985 to 1994- from 1995 to 1997- 1998), while part four of (1000m) was faster than third part in the other years of the study, while the speed rate of the fourth stage of (1000m) characterized low speed compared to fifth part in all years except for the year (1992) was the speed of fourth part faster than the fifth.

When comparing the speed rate of race parts between them in the years of the study in which recorded the world record as in table (2), we see in the first stage of the race was the best speed rate of the first part (1000m) in the year (1997) with a time of (2.32.70) minutes at a rate of speed (6.55) m/s, while the lowest rate in the year (1924) with a time of (2.48.60) minutes at a rate of speed (5.93) m/s, but when compare second stage for (2000m) was the best achieved time in year (1997) with a time of (5.05.40) minutes at a rate of speed (6.55) m/s, while the lowest rate in the year (1992) with a time of (5.47.00) minutes at a rate of speed (5.76) m/s.

While showed that the best time for third stage of (3000m) was in year (1997) with a time of (7.37.30) minutes at a rate of speed (6.56) m/s, while the lowest rate in the year (1992) with a time of (8.46.00) minutes at a rate of speed (5.70) m/s. Whereas, fourth stage of (4000m) in year (2004) was the best time of (10.07.93) minutes with a rate of speed (6.58) m/s, while the lowest rate in the year (1912) with a time of (11.40.00) minutes at a rate of speed (5.71) m/s. The last fifth part of (1000m) was the faster in year (1998) with a time of (2.27.3) minutes with a speed rate of (6.79) m/s, whereas, the slowest time in year (1912) with a time of (2.56.6) minutes at a speed rate (5.66) m/s.

When compare the best achievement in running (5000m), the first record in the year (1912) with a time of (14.36.60) minutes with a speed rate (5.70) m/s, while the best time achieved lower than (14) minutes was in year (1942) with a time of (13.58.20) minutes at a speed rate (5.97) m/s, while the best time achieved lower than (13) minutes was in year (1987) with a time of (12.58.39) minutes at a speed rate (6.42) m/s, and continued to be recorded the records in (5000m) running until the year (2004) with a time of (12:37:35) minutes at a rate of speed (6.60) m/s.

Through those results, researchers see tactical style used by most of the racers who have registered world records in running (5000 m), characterized with a fast at the beginning and the ending of the race, and the stability of their speed rate in the middle of the race stages, researchers believe that the fast tactical style at the beginning of the race was due to the presence participants have allocated for it in the race (rabbit race) their aim to raise the level of the rhythm of running, then pulling back at some stage in the race for the purpose of leaving an opportunity for talented competitors to register a new number, to make the contestants then stability in the rate of speed in the middle of the race and access to a plateau in maintaining the balance, Mohamad (1990) said that this kind of tactic plays an important role in the acquisition of aerobic and anaerobic energy processes, which takes place at that stage process of balance in the need for oxygen consumption during voltage (equivalent to the needing and consumption).

Some of the participants trying to distribute their effort on the stages of the race, it means that tactical style of participants of long-distance running is with fast start and then the stability of their speed rate in the middle of the race, as the height of the early speed rate result in higher lactic acid ratio and the depletion of glycogen reserves, making them of trying to reducing the average speed after the first stage of the race for the purpose of compensation in oxygen consumption. So, physiological scientists advised the racer of long-distance running that regulates his speed into stages of the race and with rhythm being as race type, whether when you record a new number or just to win, in other words, must delay the lactic acid combines and maintain glycogen stocks until the latter part of the race (Mohamad Hassan & AbuAlAula, 1985).

Researchers see that the development of (5000m) running achievement last years was due to new methods whether to improve the ability of the physical and physiological participants in bearing and fatigue resistance for the longest time with a high speed rate or in the strategic approach used to regulate the speed rate in stages the race with less effort. Kasim *et al.*, (1990) found that increasing training volumes in long-distance running during a training program (160 - 180) km a week is natural for each runner in long-distance running at the local racers, while training volume of higher levels weekly arrived about (300-340) km during certain stages of their training which making long-distance running racers to achieve the best global achievements in both run (5000 m -10000 m and marathon) as a result of increased training volumes.

The higher levels of the long-distance running shows great speed rate at the beginning of the race in the first (1000m) almost commensurate with their physical abilities and the last part of the race both in the last (400m) or the last (1000m), whereas the speed of the stages of the race is regular and steady rate or rhythm. The speed and dealing with time has become the primary goal of each racer in the activities of running, so the global level racers compete in accordance with the drawn plan on how to distribute the effort on the stages of the race without haste to be the first or rival racers early in order to preserve his footsteps rate and rhythm at a rate according to placed planning and what has been observed that the Ethiopian racer (Hailejper selacio bchaeli) who has global achievements in the run of (5000 m - 10000m) how to draw up a plan to distribute the effort on the stages of the race and a surprise contestants in the final stages and achieve better achievement.

4. Conclusion:

Researchers concluded that tactical style used to complete parts 5,000m run marked with similar pace among most of the racers when you sign the global recorders, moreover, strategic or tactical style does not depend on 5,000m run at a constant pace, but there are stages of the race was marked by the increasing speed and another stages are with stable rate or decreasing and increasing in the last phase, study also found to find a predictive speed rates for levels of future performance in 5,000m run.

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