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IMPACTS OF TRAINING PROGRAM ACCORDING TO BIOMECHANICAL VARIABLES IN 200 m SPRINT

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Abstract
Purpose. The purpose of the present study was to identify the biomechanical systems which affecting the improvement of the record level for the 200-meter race and after that Design a training program proposal.
Methods. Three high level players in the competition of 200 meters, members of Al-Ahly club, where three players to perform competition 200 meters, the sprint of all players inside the lane in the area were selected out of the blocks start and the three first strides, three strides in a straight line and the curve for the analysis of motor (9 attempts) to stand the problems of the sprint to legalize the program and place it on an objective scientific basis.
Results. The training program according to biomechanical variables in 200m sprint affected and improvement of the record level of 200m sprinting race
Conclusions. The application of the proposed program.
Key words: sprinting, biomechanics .training .200msprinting

Introduction:

Sprinting can be defined as the ability to run at maximum speed for a short duration. Maximum running speed is an important factor for success in many sports. (J .Leblanc, & P. Gervais, 2004)

Sprinting is associated primarily with power and speed, whereas distance running is focused on efficiency and smoothness of movement. This major difference is easily observed at a track meet or practice where both groups are competing. As the distance team runs lap after lap, their ease of movement and smoothness of stride is apparent. They appear collected and controlled in their actions, delaying the onset of fatigue with their methods of minimizing the energy expenditure. The sprinters, on the other hand, demonstrate high speed and explosive movement. They showcase their power with quick, forceful motion as they speed down the track. (D. Tyler., 2004)

The development of performances in the 200 m sprint has been affected by its intermediate position between the 100 m and 400 m. All efforts to describe a statistical relationship between either the 100 m or 400 m distance with the 200 m have been unsuccessful. There are successful double-starters from both disciplines: Hence the running style of each individual is very specific. However, there are general modeling laws that determine optimal running stride, and these are important starting points in the teaching and improving young runners' running technique. (R. Corn, & D. Knudson., 2003)

The sprinter's goal is to develop the highest possible horizontal velocity. As an example this velocity is developed in the 100m sprint within 43 - 46 strides (men) and 47 - 52 strides (women). A stride consists of a stance and a flight phase. The sprinter's horizontal propulsion is only produced during the stance phase. The push-off leg presses against the resistance of the floor in a backward-downward direction ("action") and the interactive forces result in the horizontal propulsion of the body in a forward-upward direction ("reaction"). The stance phase is prepared during the flight phase. It is important that all forces acting against the running direction (e.g. resisting movements) are minimized. During the flight phase the legs must actively swing downwards - backwards because from a subjective point of view it seems to the sprinter that the ground is coming towards him. (O. Mohamed ., 1993)

The sprinting velocity is mathematically determined by the product of stride length and stride rate. These two factors interact: after they have reached a certain level after a phase of mutually increasing (in the first 50 m) an increase in either parameter will result in a corresponding decrease of the other, i.e. if the sprinter increases his stride length after 50 m then the stride rate must decrease and vice versa. The extent of these changes varies individually depending upon physical capabilities, training level, form of training and body build.

The purpose of the present study was to identify the biomechanical systems which affecting the improvement of the record level for the 200-meter race and after that Design a training program proposal, according to some indicators associated with biomechanical stage (response and reaction speed in the beginning, the sprint in the curve, the sprint in the Straight line) to improve the record level for the 200-meter race. And Identify the impact of the proposed training program to improve the rec

ord level for the 200-meter race.

Methods.

The researcher used the descriptive and experimental methods in this study , Three high level players in the competition of 200 meters, members of Al-Ahly club, where three players to perform competition 200 meters, the sprint of all players inside the lane in the area were selected out of the blocks start and the three first strides, three strides in a straight line

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and the curve for the analysis of motor (9 attempts) to stand the problems of the sprint to legalize the program and place it on an objective scientific basis, and a table (1) shows the statistical description of the sample.

Tools and devices used in data collection are:

1 - hardware and tools for imaging video

- Form for data collection
- Restmeter to measure the length of the sample
- A video camera and one to film the performance and returns the physical picture of the movement operating at 25 cadre / sec
- A computer program for the provider to display an image, and image analysis program motor (Motion Track)
- Video + tripod + and calibration unit
- Balance of medical standards for measuring the weight

• Stopwatch to measure time

• Gun sound

• The field of competition law to measure the 200-meter sprint

• Measuring tape

• White powder is placed on the floor of the track to position the foot

• different weights

• Resistors of different weights drawn

program foundations .

A - strides pre- photography and photography

photography was implemented on Monday, 26/10/2009 m at exactly eleven o'clock am in the court of a youth center island, have included measurement of basic measurements (height, weight, level, digital), photography was in the following stages (preparation for filming, photography, analysis) .

Table 1: Anthropometric Characteristics and Training experience of the Group (Mean ± SD)

Variables	Mean	± SD
Record level (200m) [Seconds]	**22.77**	**0.25**
Age [years]	**24.00**	**1.00**
Training experience[years]	**8.00**	**2.65**
Height [cm]	**181.33**	**7.51**
Weight [kg]	**68.67**	**3.51**

Table 1 shows the age and anthropometric characteristics of the subjects. There were no significant differences were observed in the anthropometric characteristics and Training experience for the subjects in the experimental group.

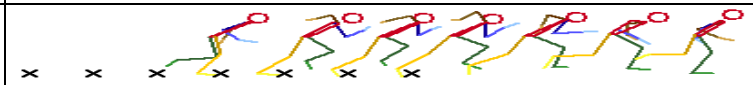
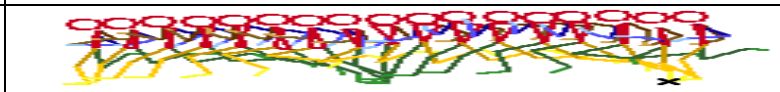
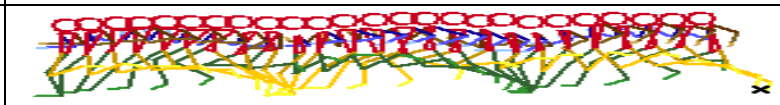
Table 2: The biomechanical variables for sprinter one .

Stage of starting blocks	
Responding **1-5** **(0.20 second)**	
Push until the first stride **6-15** • **Time out of the blocks (0.56 S)** • **Time of the first stride (0.40 S)** • **Stride length (2.9 rate/second)**	
the second stride **16-20** • **Time of the stride (0.20 S)**	
the third stride **21-27** • **Time of the stride (0.28 S)**	
Stage of sprinting in the curve • **Time of the stride (0.28 S)**	
Stage of sprinting in the Straight line • **Time of the stride (0.28 S)** • **Stride length (2.9 rate/second)** • **Stride rate (4.1 meter)**	

Is clear from Table (2) Reaction Time (0.20 seconds), and Time out of the Blocks (0.56 seconds), and Time Stride (0.28 seconds), and stride length (2.9 m), and Stride rate (4.1 meter).

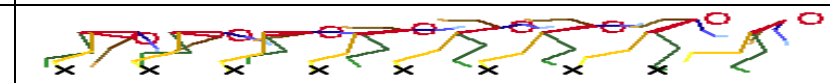
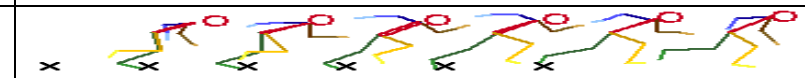
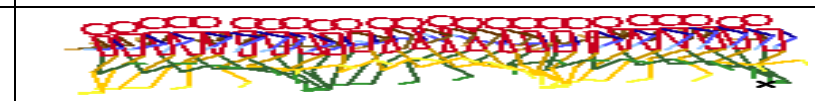
Table 3: The biomechanical variables for sprinter two .

Stage of starting blocks	
Responding **1-6** **(0.24 second)**	

Push until the first stride **7-14** • **Time out of the blocks (0.52 S)** • **Time of the first stride (0.32 S)** • **Stride length (1.014 rate/second)**	
the second stride **16-20** • **Time of the stride (0.28 S)**	
the third stride **21-27** • **Time of the stride (0.28 S)**	
Stage of sprinting in the curve • **Time of the stride (0.32 S)**	
Stage of sprinting in the Straight line • **Time of the stride (0.36 S)** • **Stride length (2.89 rate/second)** • **Stride rate (3.12 meter)**	

Is clear from Table (3) Reaction Time (0.24 seconds), and Time out of the Blocks (0.52 seconds), and Time Stride (0.36 seconds), and stride length (2.89 m), and Stride rate (3.12 meter).

Table 4: The biomechanical variables for sprinter three .

Stage of starting blocks	
Responding **1-5** **(0.24 second)**	
Push until the first stride **6-15** • **Time out of the blocks (0.52 S)** • **Time of the first stride (0.32 S)** • **Stride length (0.89 rate/second)**	
the second stride **16-20** • **Time of the stride (0.24 S)**	
the third stride **21-27** • **Time of the stride (0.16 S)**	
Stage of sprinting in the curve • **Time of the stride (0.32 S)**	
Stage of sprinting in the Straight line • **Time of the stride (0.36 S)** • **Stride length (2.27 rate/second)** • **Stride rate (3.26 meter)**	

Is clear from Table (4) Reaction Time (0.24 seconds), and Time out of the Blocks (0.52 seconds), and Time Stride (0.36 seconds), and stride length (2.27 m), and Stride rate (3.26 meter).

Table 5: Itinerary of the body's center of gravity for the three players

Stages	Image number	Time	Itinerary of the body's center of gravity	
			Y	X
Stage of starting blocks	1	0	0.57	0.34
	2	0.04	0.56	0.33
	3	0.08	0.56	0.34
	4	0.12	0.58	0.33
	5	0.16	0.59	0.34
	6	0.2	0.66	0.41
	7	0.24	0.67	0.45
	8	0.28	0.70	0.48

	9	**0.32**	**0.72**	**0.55**
	10	**0.36**	**0.76**	**0.63**
	11	**0.4**	**0.78**	**0.71**
	12	**0.44**	**0.80**	**0.83**
	13	**0.48**	**0.83**	**0.99**
	14	**0.52**	**0.82**	**1.08**
	15	**0.56**	**0.81**	**1.17**
	16	**0.6**	**0.81**	**1.34**
	17	**0.64**	**0.83**	**1.48**
	18	**0.68**	**0.85**	**1.60**
	19	**0.72**	**0.86**	**1.78**
	20	**0.76**	**0.87**	**1.92**
	21	**0.8**	**0.86**	**2.09**
	22	**0.84**	**0.85**	**2.27**
	23	**0.88**	**0.86**	**2.48**
	24	**0.92**	**0.87**	**2.64**
	25	**0.96**	**0.94**	**2.11**
	26	**1**	**0.94**	**2.23**
	27	**1.04**	**0.96**	**2.42**
	28	**1.08**	**0.93**	**2.19**
Stage of sprinting in the curve	**1**	**0**	**1.06**	**0.13**
	2	**0.04**	**1.03**	**-0.21**
	3	**0.08**	**1.06**	**-0.56**
	4	**0.12**	**1.08**	**-0.90**
	5	**0.16**	**1.07**	**-1.24**
	6	**0.2**	**1.04**	**-1.60**
	7	**0.24**	**1.02**	**-1.92**
	8	**0.28**	**1.02**	**-2.26**
	9	**0.32**	**1.01**	**-2.59**
	10	**0.36**	**0.99**	**-2.90**
	11	**0.4**	**0.99**	**-3.23**
	12	**0.44**	**0.98**	**-3.53**
	13	**0.48**	**0.96**	**-3.88**
	14	**0.52**	**0.94**	**-4.19**
	15	**0.56**	**0.92**	**-4.50**
	16	**0.6**	**0.92**	**-4.82**
	17	**0.64**	**0.91**	**-5.13**
	18	**0.68**	**0.88**	**-5.78**
	19	**0.72**	**0.87**	**-6.11**
	20	**0.76**	**0.81**	**-6.19**
	21	**0.8**	**0.80**	**-6.49**
Stage of sprinting in the Straight line	**1**	**0**	**1.15**	**-0.13**
	2	**0.04**	**1.19**	**-0.46**
	3	**0.08**	**1.21**	**-0.77**
	4	**0.12**	**1.19**	**-1.09**
	5	**0.16**	**1.19**	**-1.43**
	6	**0.2**	**1.15**	**-1.75**
	7	**0.24**	**1.09**	**-2.06**
	8	**0.28**	**1.07**	**-2.38**
	9	**0.32**	**1.09**	**-2.67**
	10	**0.36**	**1.13**	**-2.97**
	11	**0.4**	**1.15**	**-3.30**
	12	**0.44**	**1.14**	**-3.59**
	13	**0.48**	**1.16**	**-3.90**
	14	**0.52**	**1.11**	**-4.21**
	15	**0.56**	**1.08**	**-4.53**
	16	**0.6**	**1.01**	**-4.82**

	17	**0.64**	**1.03**	**-5.11**
	18	**0.68**	**1.04**	**-5.42**
	19	**0.72**	**1.06**	**-5.72**
	20	**0.76**	**1.10**	**-6.02**
	21	**0.8**	**1.06**	**-6.31**
	22	**0.84**	**1.04**	**-6.63**
	23	**0.88**	**1.01**	**-6.94**
	24	**0.92**	**0.96**	**-7.23**
	25	**0.96**	**1.06**	**-8.15**

Is clear from Table (5) Average displacement of the center point of the body weight in moments of the start and the sprint in the curved and straight for the three players.

Table 6: means of the body angles for the three players

Stages	Image number	Time	Trunk	Right elbow	Left elbow	Right knee	Left knee	Right ankle	Left ankle
Stage of starting blocks	**1**	**0**	**0.00**	**170.99**	**170.32**	**103.43**	**90.79**	**96.26**	**90.49**
	2	**0.04**	**-17.01**	**173.93**	**170.32**	**103.70**	**94.03**	**96.74**	**62.78**
	3	**0.08**	**-8.35**	**169.05**	**170.00**	**110.12**	**91.10**	**100.97**	**102.60**
	4	**0.12**	**-31.59**	**166.36**	**174.45**	**108.54**	**96.61**	**101.45**	**96.35**
	5	**0.16**	**50.37**	**172.15**	**177.81**	**119.09**	**104.56**	**102.41**	**94.57**
	6	**0.2**	**44.36**	**159.61**	**151.66**	**116.93**	**114.12**	**116.29**	**93.87**
	7	**0.24**	**11.55**	**158.91**	**166.29**	**114.53**	**114.29**	**115.70**	**108.06**
	8	**0.28**	**-6.89**	**150.05**	**128.39**	**96.94**	**115.63**	**106.40**	**96.75**
	9	**0.32**	**18.27**	**155.55**	**120.52**	**87.56**	**118.07**	**99.04**	**104.57**
	10	**0.36**	**25.67**	**137.30**	**93.66**	**80.11**	**130.42**	**88.35**	**106.08**
	11	**0.4**	**11.07**	**117.56**	**83.00**	**83.64**	**139.74**	**76.37**	**102.32**
	12	**0.44**	**2.97**	**115.14**	**117.64**	**92.31**	**142.89**	**80.03**	**112.81**
	13	**0.48**	**13.34**	**127.11**	**103.25**	**107.65**	**141.91**	**85.38**	**118.75**
	14	**0.52**	**-6.98**	**126.83**	**98.86**	**112.48**	**118.02**	**84.64**	**120.65**
	15	**0.56**	**1.63**	**128.51**	**98.03**	**122.20**	**98.22**	**78.46**	**107.04**
	16	**0.6**	**-1.86**	**97.68**	**119.96**	**127.87**	**71.09**	**67.47**	**106.80**
	17	**0.64**	**4.87**	**78.59**	**119.59**	**145.65**	**74.58**	**68.24**	**86.18**
	18	**0.68**	**10.06**	**75.31**	**129.75**	**156.00**	**87.36**	**100.48**	**90.63**
	19	**0.72**	**5.31**	**106.34**	**106.62**	**143.58**	**110.82**	**122.45**	**66.66**
	20	**0.76**	**2.48**	**108.25**	**97.08**	**116.62**	**120.90**	**119.04**	**84.21**
	21	**0.8**	**-3.84**	**128.17**	**108.39**	**96.02**	**136.92**	**119.43**	**78.77**
	22	**0.84**	**-0.54**	**134.40**	**95.12**	**76.76**	**130.94**	**107.50**	**83.12**
	23	**0.88**	**3.65**	**105.07**	**71.84**	**87.19**	**147.87**	**102.94**	**78.34**
	24	**0.92**	**3.09**	**107.05**	**67.19**	**98.07**	**151.46**	**94.82**	**103.63**
	25	**0.96**	**13.74**	**85.33**	**44.51**	**100.92**	**164.81**	**87.05**	**118.48**
	26	**1**	**1.33**	**95.74**	**101.83**	**107.86**	**136.04**	**80.57**	**113.68**
	27	**1.04**	**3.41**	**107.91**	**119.71**	**126.69**	**101.52**	**86.59**	**108.15**
	28	**1.08**	**-6.10**	**68.11**	**150.89**	**136.62**	**96.68**	**69.91**	**133.34**
Stage of sprinting in the curve	**1**	**0**	**-66.67**	**82.67**	**106.71**	**109.61**	**72.51**	**93.51**	**99.76**
	2	**0.04**	**-76.67**	**71.85**	**100.00**	**104.16**	**86.68**	**90.23**	**83.62**
	3	**0.08**	**-26.00**	**60.82**	**75.46**	**115.44**	**109.72**	**122.32**	**100.47**
	4	**0.12**	**-26.67**	**53.93**	**76.34**	**109.01**	**141.68**	**111.26**	**111.54**
	5	**0.16**	**-26.00**	**72.74**	**69.36**	**97.99**	**148.89**	**118.57**	**98.31**
	6	**0.2**	**-78.33**	**88.91**	**65.92**	**88.88**	**141.61**	**110.27**	**102.38**
	7	**0.24**	**-82.67**	**94.52**	**82.28**	**70.67**	**125.25**	**103.01**	**86.67**
	8	**0.28**	**-70.67**	**84.65**	**77.72**	**80.92**	**104.70**	**88.61**	**78.62**
	9	**0.32**	**-70.33**	**73.06**	**69.24**	**103.32**	**104.37**	**91.12**	**107.75**
	10	**0.36**	**-75.67**	**86.36**	**68.56**	**117.77**	**98.96**	**85.67**	**115.95**
	11	**0.4**	**-20.00**	**82.72**	**44.34**	**140.61**	**84.68**	**100.20**	**96.94**
	12	**0.44**	**-22.67**	**71.85**	**80.20**	**149.80**	**68.31**	**109.86**	**111.99**
	13	**0.48**	**-23.33**	**66.99**	**85.37**	**150.60**	**71.64**	**102.43**	**111.39**
	14	**0.52**	**-21.67**	**56.39**	**104.95**	**134.87**	**75.41**	**100.42**	**111.68**
	15	**0.56**	**-25.00**	**48.23**	**97.01**	**123.46**	**91.33**	**93.79**	**108.43**

	16	0.6	85.67	58.99	81.89	108.86	113.81	107.88	127.96
	17	0.64	-22.00	42.44	73.82	94.32	129.58	117.08	89.62
	18	0.68	3.50	37.59	88.30	97.73	141.53	116.79	104.20
	19	0.72	-84.00	43.18	69.08	73.18	153.63	112.44	99.33
	20	0.76	89.00	62.08	103.10	58.06	160.60	111.06	101.27
	21	0.8	-82.00	92.05	114.30	34.17	145.81	105.34	81.60
Stage of sprinting in the Straight line	1	0	-82.00	84.91	90.05	99.38	74.04	82.20	106.95
	2	0.04	-82.67	58.30	89.59	121.39	85.12	93.11	107.95
	3	0.08	-82.33	52.03	76.58	140.46	101.94	119.48	109.57
	4	0.12	33.00	29.91	74.75	138.08	120.70	113.47	113.95
	5	0.16	30.67	44.68	81.78	117.19	129.09	118.81	101.89
	6	0.2	31.33	76.89	84.70	101.04	117.31	124.67	98.54
	7	0.24	32.67	84.03	92.46	77.60	101.06	111.69	96.48
	8	0.28	-81.67	97.85	91.34	83.16	99.58	106.49	105.94
	9	0.32	-24.00	88.19	72.96	96.01	103.75	106.16	108.57
	10	0.36	-28.00	79.24	60.06	118.41	108.01	115.18	103.77
	11	0.4	-23.67	82.23	60.41	132.05	108.88	101.03	115.22
	12	0.44	-26.00	81.88	69.00	136.23	108.61	109.61	117.34
	13	0.48	-79.33	67.57	76.41	127.60	93.39	93.39	125.19
	14	0.52	-24.00	75.56	79.49	121.12	96.02	96.26	106.93
	15	0.56	26.00	78.81	75.40	118.38	98.04	106.79	104.26
	16	0.6	-30.33	60.75	82.76	106.19	93.69	95.36	90.11
	17	0.64	-21.00	60.54	71.62	102.33	102.26	103.83	98.94
	18	0.68	-26.33	59.39	80.03	94.61	115.91	110.76	89.26
	19	0.72	89.67	52.67	74.36	108.04	135.75	113.23	108.19
	20	0.76	86.00	58.33	53.19	131.40	127.67	120.93	116.21
	21	0.8	0.00	28.51	56.80	133.78	135.77	115.29	112.45
	22	0.84	-85.50	53.15	51.40	127.22	132.57	121.58	112.23
	23	0.88	88.00	64.42	73.70	120.52	113.84	120.13	131.60
	24	0.92	4.50	74.21	75.25	95.54	97.15	113.23	100.04
	25	0.96	-180.00	72.62	65.75	142.32	41.16	75.55	130.14

Table 7: The average value of instantaneous speed of the body , the left and right ankle and the left and right Instep for the three players

Stages	Image number	Time	instantaneous speed m/s				
			Body	Right ankle	Left ankle	Right instep	Left instep
Stage of starting blocks	1 -> 2	0	0.35	0.44	0.45	0.29	0.62
	2 -> 3	0.04	0.42	1.14	0.46	0.33	0.48
	3 -> 4	0.08	0.48	0.74	0.44	0.30	0.00
	4 -> 5	0.12	0.48	0.79	1.15	0.21	0.34
	5 -> 6	0.16	2.64	1.50	0.00	0.34	0.00
	6 -> 7	0.2	1.33	2.36	1.85	2.03	0.27
	7 -> 8	0.24	1.32	3.03	1.47	2.85	0.43
	8 -> 9	0.28	1.89	4.13	1.66	4.69	1.01
	9 -> 10	0.32	2.27	4.82	1.13	6.28	0.55
	10 -> 11	0.36	2.28	5.14	0.79	7.18	0.61
	11 -> 12	0.4	3.12	5.52	2.11	5.43	0.77
	12 -> 13	0.44	3.95	4.34	4.70	4.79	3.13
	13 -> 14	0.48	2.47	1.93	4.16	1.90	3.08
	14 -> 15	0.52	2.23	1.84	5.91	0.83	6.96
	15 -> 16	0.56	4.17	0.71	10.55	0.29	10.91
	16 -> 17	0.6	3.55	1.28	7.18	0.49	9.85
	17 -> 18	0.64	2.96	3.18	6.54	1.09	6.93
	18 -> 19	0.68	4.59	4.64	7.86	2.40	8.98
	19 -> 20	0.72	3.57	5.06	3.63	3.74	3.34
	20 -> 21	0.76	4.34	9.17	1.24	8.63	0.86
	21 -> 22	0.8	4.45	8.54	1.62	10.60	0.47

	22 -> 23	0.84	5.18	12.30	1.51	14.27	0.29
	23 -> 24	0.88	4.08	6.51	3.37	8.41	0.93
	24 -> 25	0.92	3.55	6.74	1.34	8.40	0.22
	25 -> 26	0.96	4.06	5.38	4.63	5.67	2.90
	26 -> 27	1	6.54	2.74	12.38	3.76	9.86
	27 -> 28	1.04	5.17	3.06	9.35	2.19	9.10
Stage of sprinting in the curve	1 -> 2	0	8.72	5.39	8.66	5.38	11.36
	2 -> 3	0.04	8.64	8.29	12.18	6.12	12.77
	3 -> 4	0.08	8.76	11.17	11.97	11.29	11.66
	4 -> 5	0.12	8.44	12.43	9.24	13.25	9.86
	5 -> 6	0.16	8.90	14.00	6.48	13.14	6.76
	6 -> 7	0.2	8.23	11.30	5.90	11.96	4.81
	7 -> 8	0.24	8.51	9.74	5.38	13.28	5.11
	8 -> 9	0.28	8.05	10.34	7.51	11.41	4.58
	9 -> 10	0.32	8.01	9.49	7.94	11.31	6.84
	10 -> 11	0.36	8.16	9.85	10.13	8.40	10.71
	11 -> 12	0.4	7.58	7.43	14.05	6.43	14.19
	12 -> 13	0.44	8.69	4.96	12.66	4.31	13.89
	13 -> 14	0.48	7.81	5.55	12.15	4.14	12.29
	14 -> 15	0.52	7.94	4.71	10.78	3.90	13.97
	15 -> 16	0.56	7.96	8.03	10.87	6.07	11.42
	16 -> 17	0.6	7.77	9.13	8.54	7.80	10.70
	17 -> 18	0.64	8.85	11.61	9.94	9.91	11.38
	18 -> 19	0.68	8.17	11.40	6.66	12.28	6.73
	19 -> 20	0.72	7.73	13.00	6.20	11.75	5.72
	20 -> 21	0.76	7.31	11.98	1.87	11.63	2.12
Stage of sprinting in the Straight line	1 -> 2	0	8.72	7.96	10.98	7.04	12.14
	2 -> 3	0.04	8.99	8.01	15.32	7.96	17.22
	3 -> 4	0.08	8.64	11.32	14.10	9.21	15.35
	4 -> 5	0.12	9.08	12.60	11.42	10.69	11.03
	5 -> 6	0.16	8.81	10.44	7.65	11.25	8.27
	6 -> 7	0.2	8.48	9.48	6.84	9.83	7.51
	7 -> 8	0.24	8.43	7.81	3.77	10.06	3.65
	8 -> 9	0.28	8.29	9.26	5.82	10.67	4.79
	9 -> 10	0.32	8.70	12.21	8.61	12.60	10.09
	10 -> 11	0.36	8.68	10.32	12.19	12.28	11.00
	11 -> 12	0.4	8.34	9.57	11.87	8.70	11.50
	12 -> 13	0.44	8.46	7.90	13.13	8.46	11.85
	13 -> 14	0.48	8.50	7.50	9.63	6.03	13.16
	14 -> 15	0.52	7.94	7.43	10.79	6.69	12.28
	15 -> 16	0.56	8.21	5.56	10.08	5.67	11.14
	16 -> 17	0.6	10.14	8.41	9.69	8.15	9.65
	17 -> 18	0.64	8.24	10.74	8.18	9.76	9.70
	18 -> 19	0.68	8.52	10.05	8.62	10.70	7.36
	19 -> 20	0.72	7.69	10.95	10.34	10.00	11.19
	20 -> 21	0.76	7.39	9.10	10.44	10.38	11.13
	21 -> 22	0.8	7.86	13.78	9.23	10.87	8.78
	22 -> 23	0.84	7.63	7.21	8.02	8.76	7.62
	23 -> 24	0.88	7.60	8.45	6.37	10.18	5.75
	24 -> 25	0.92	7.36	0.00	10.60	0.96	11.53

Table 8: Value of the power of the body of the three players

Stages	Image number	Time	Power of the body (Newton)		
			X	Y	XY
Stage of starting blocks	1 -> 2	0	35.71	-19.25	54.96
	2 -> 3	0.04	15.18	1.37	11.87
	3 -> 4	0.08	12.44	-21.53	33.64
	4 -> 5	0.12	0.92	-0.83	-0.02

	5 -> 6	**0.16**	**712.00**	**-572.08**	**1271.54**
	6 -> 7	**0.2**	**-140.99**	**149.36**	**-295.09**
	7 -> 8	**0.24**	**19.14**	**2.68**	**-0.07**
	8 -> 9	**0.28**	**334.50**	**-10.09**	**292.62**
	9 -> 10	**0.32**	**105.28**	**-184.33**	**258.52**
	10 -> 11	**0.36**	**129.16**	**5.80**	**-1.31**
	11 -> 12	**0.4**	**1098.12**	**-131.86**	**1207.85**
	12 -> 13	**0.44**	**697.55**	**-32.90**	**723.65**
	13 -> 14	**0.48**	**-584.45**	**27.97**	**-622.87**
	14 -> 15	**0.52**	**86.26**	**-17.18**	**84.94**
	15 -> 16	**0.56**	**1724.20**	**7.75**	**1691.61**
	16 -> 17	**0.6**	**-429.62**	**-2.07**	**-432.58**
	17 -> 18	**0.64**	**-218.14**	**-34.29**	**-198.82**
	18 -> 19	**0.68**	**1877.22**	**12.20**	**1853.39**
	19 -> 20	**0.72**	**-408.15**	**5.29**	**-419.35**
	20 -> 21	**0.76**	**586.29**	**-24.13**	**606.18**
	21 -> 22	**0.8**	**886.02**	**-9.17**	**892.71**
	22 -> 23	**0.84**	**1842.23**	**-1.54**	**1841.42**
	23 -> 24	**0.88**	**-720.33**	**-0.81**	**-732.26**
	24 -> 25	**0.92**	**-9.10**	**-99.21**	**44.06**
	25 -> 26	**0.96**	**413.92**	**8.73**	**348.76**
	26 -> 27	**1**	**3718.09**	**-68.60**	**3770.44**
	27 -> 28	**1.04**	**962.24**	**-47.89**	**994.96**
Stage of sprinting in the curve	**1 -> 2**	**0**	**1512.83**	**-137.69**	**1526.98**
	2 -> 3	**0.04**	**-23.51**	**-16.53**	**-14.89**
	3 -> 4	**0.08**	**33.69**	**37.53**	**17.32**
	4 -> 5	**0.12**	**-53.29**	**69.48**	**-58.91**
	5 -> 6	**0.16**	**77.48**	**-93.01**	**85.80**
	6 -> 7	**0.2**	**-110.53**	**88.63**	**-118.11**
	7 -> 8	**0.24**	**47.67**	**1.35**	**47.34**
	8 -> 9	**0.28**	**-80.29**	**-28.49**	**-77.60**
	9 -> 10	**0.32**	**-20.80**	**-85.67**	**-10.73**
	10 -> 11	**0.36**	**40.26**	**95.77**	**28.28**
	11 -> 12	**0.4**	**-99.78**	**33.92**	**-101.23**
	12 -> 13	**0.44**	**181.01**	**-156.31**	**192.97**
	13 -> 14	**0.48**	**-143.27**	**118.05**	**-152.72**
	14 -> 15	**0.52**	**23.80**	**3.95**	**22.84**
	15 -> 16	**0.56**	**1.29**	**-8.44**	**3.34**
	16 -> 17	**0.6**	**-35.92**	**-61.55**	**-31.03**
	17 -> 18	**0.64**	**125.02**	**-67.33**	**133.96**
	18 -> 19	**0.68**	**-105.85**	**136.46**	**-119.59**
	19 -> 20	**0.72**	**-127.60**	**-135.21**	**-114.01**
	20 -> 21	**0.76**	**-55.01**	**154.83**	**-69.21**
Stage of sprinting in the Straight line	**1 -> 2**	**0**	**1524.50**	**-120.91**	**1530.50**
	2 -> 3	**0.04**	**53.15**	**50.73**	**48.93**
	3 -> 4	**0.08**	**-65.95**	**-16.55**	**-63.99**
	4 -> 5	**0.12**	**77.38**	**65.87**	**73.85**
	5 -> 6	**0.16**	**-65.62**	**-221.45**	**-44.40**
	6 -> 7	**0.2**	**-54.89**	**102.78**	**-61.64**
	7 -> 8	**0.24**	**1.60**	**35.15**	**-6.69**
	8 -> 9	**0.28**	**-23.88**	**-18.46**	**-23.41**
	9 -> 10	**0.32**	**74.80**	**1.65**	**75.03**
	10 -> 11	**0.36**	**-5.23**	**19.79**	**-8.88**
	11 -> 12	**0.4**	**-59.37**	**-4.70**	**-57.65**
	12 -> 13	**0.44**	**23.49**	**5.30**	**22.51**
	13 -> 14	**0.48**	**-0.39**	**-57.66**	**5.08**
	14 -> 15	**0.52**	**-212.71**	**-252.97**	**-97.74**

	15 -> 16	**0.56**	**142.00**	**194.32**	**40.50**
	16 -> 17	**0.6**	**334.80**	**-116.91**	**349.57**
	17 -> 18	**0.64**	**-303.07**	**274.81**	**-339.43**
	18 -> 19	**0.68**	**33.52**	**-132.94**	**49.71**
	19 -> 20	**0.72**	**25.83**	**-12.63**	**19.47**
	20 -> 21	**0.76**	**-47.42**	**38.50**	**-51.69**
	21 -> 22	**0.8**	**83.83**	**17.62**	**82.82**
	22 -> 23	**0.84**	**-44.21**	**17.81**	**-45.84**
	23 -> 24	**0.88**	**-15.73**	**-134.43**	**2.38**
	24 -> 25	**0.92**	**-63.57**	**315.61**	**-99.67**

Through the presentation of the results tables (2,3,4), which shows the times out of the blocks for the three players have shown the reaction times are (0.20- 0.24- 0.24) second. and the researcher believes that the three players times as high as the appropriate reaction time which less than (0.12) because it is a time limit to the normal processing of information from the ears to the muscles, so that the three players need to shorten the reaction time and should hone the muscular and nervous system significantly, and there is a significant correlation between the speed of the sprinting and the reaction time. (S. Ibrahim , 1998)

The table (6) shows the angles of the body for a moment getting ready for each of the three players.

Accordance with the decision of each of (H. Talha.,1993) and (M. Coh, et al. 1998) are corners of links as follows: angle of detailed feet hind leg of 80 - 85 ˚, corner joint made man the front of the 120 - 140 ˚, angle of knee hind leg of 120-140 ˚, angle of knee man front of 90 - 96 ˚, and in the development take place, the main goal is to focus full of muscular and nervous system and secure payment of the feet and in getting ready to take the best conditions that enable him to rush the maximum power and speed of the MAM and the center of gravity in the most appropriate .the pre-departure (I. Mufti.,2001) and the researcher believes that the angles of the ankle forward and backward and the knee needs to correct and to reduce the angle of the knee is rounded cubic starting forward, and to increase the angle of the knee is retraction of the cube to start getting ready behind the development.

(A. khaled , 2006) biomechanical analysis of the stride is the landing phase in the first stride, in which one foot landing lightly in front of the body at about 6-12 inches unfolded and the angle of the knee 150-160 ˚ almost foot 90 ˚ almost two feet and the stage of damping in the stride and the angle of inclination trunk 7-11 ˚ angle of 80-85 ˚ foot and knee angle 145-156 ˚ angle of the knee and the free and the stage of 36-40 ˚ coverage in the stride and the angle of the foot from 80-85 ˚ and the angle of the knee to knee Free 45-50 ˚ start-up phase in the stride and the angle foot of 25 ˚ (38:4), he sees, Mohammed Suleiman Peace (2009 m) the average angle of the front knee be based (130,7 ˚), the researcher believes have not set the angles of the elbow, knee and ankle, both in running straight or curved.

Discussion and conclusion

Table 9: Pre-post measurements of Record Level of (200 m) sprinting race and the rate of improvement for the three players

Player	Pre-measurement	Post-measurement	Improvement rate
1	23.8	22.00	7.56%
2	23.9	22.3	6.7%
3	22.5	21	6.7%

Seen from the table (9) rates improved measurements posteriori for tribal for the three players, namely, (3.51, 3.8, 3.23%) and show improvement in the players and their response to the proposed program to improve the digital race (200 m) the sprint, and the researcher believes that the program has improved digit level as a result of improved start like the status and thus its speed and is in line and the opinion of (I. Mufti.,2001) in that the training program proposed regular lead consistent performance level and non-oscillating in attempts to performance with the flow and not to cut the performance and make less effort as possible during the performance with a higher excitability of the motivation and access to the degree of automation with low degree of muscle tension and to adapt to the circumstances surrounding (134:12) and in accordance with the opinion of (O. Mohamed., 1993) in that the development take place, the main goal is the total concentration of the two muscular and nervous system and secure payment of the feet and in the development getting ready to take the best conditions that enable him to rush the maximum power and speed forward and the center of gravity in the most appropriate conditions leading up to the starting .

According to (B. Sharkey, S. Gaskell., 2006) that can train and improve the speed of reaction time training and learning that when the send signal to the brain (interesting) It sends the response to the nerves of the muscles to initiate movement, and time spent in operations and the movement called the time of the reaction, and we likely cannot change the time of the move, but with training and experience can improve operations cortex to improve the classification of information is the most important, and depends on muscle strength and genes (FG-FOG) in the muscle fibers, the use of muscle fibers driving appropriately for the best relay motor, the best production of muscle by training, experience and learning and thus the possible development of reaction speed through education and training, and can improve the speed of reaction in the upper levels better than others, and confirms the (A. Mero, et al.1992) that the first steps after leaving the cube be short and very fast on the comb and that the speed of a starting player at the beginning of the race have influenced the psychological to the rest of the contestants, as they pay the rider to maintain what we achieved at the beginning of the race, it is not necessary to be linked to the speed of the reaction the rest of the types of speed other that the development of the type and measure is the best way to develop this kind of speed (A. Aboelela & N. Ahmed,2003) and training programs with resistors high through the crunch constant intensity lead to the improvement of reaction time by 13%. (G. Abdelstar., 2000) when

you hear the shot gun requires starting fast and leave the earth, which depends on the payment feet and arms for the runners sprint to respond to the shot gun, and adds to the hostility which trained constantly on the voice of the gun become the fastest runners of cubes and stop the development speed of the reaction to the case of training has reached the player and the associated speed and training to shorten the time of response must sharpen the muscular and nervous system to a high degree of sensitivity and very stressful, and there is a significant correlation between the ability of the sprint and the reaction time. (S. Ibrahim.,1998) and exercises initially linked to training to improve speed and reaction and compatibility neuromuscular and balance .(I. Mohamed ., 2006), and the development of performance skills to start low to get players to the highest degree possible so as to lead the highest degree of automation and accuracy, flow and motivation allowed by the capacity of players to achieve the best results with the economy in an effort , can be expected to improve in 8 to 12 weeks (F. Kugler., et al. 2010)

The components of elements of fitness-related skills that enable players to succeed in track and field by achieving performance automation and access to upper levels consist of fitness, balance, consensus neuromuscular, the ability, muscle reaction time, speed. (W. Hoeger & S. Hoeger.,2006)

an increase will lead to a reduction similar to the last, in the event of increased hostility to him After extensive length of 50 m and then a wide and must be that the rate of decline and vice versa, the extent of these changes individually and vary depending on their material, and training at the level of the form of training and body building, if the reaction was less than the time 0.12 s appropriate because it is sprinting as compared to normal free sprinting in trained athletes. In M. Montagne, D. G. Robertson, and H. Sveistrup (Eds.), Proceedings of XXII International Symposium on Biomechanics in Sports (pp. 536). Ottawa: University of Ottawa.

supposed that this represents a natural limit to process information from one ear to the muscles, (A. Zafeiridis, et al. 2007).

References .

ABDELSTAR J. (2000). Physiology of the mental processes in sport analysis - Training - measure, House thought of printing, publishing and distribution, Jordan.

ABO EL ELA, A., AHMED, N. (2003). Physiology of Fitness, M 2, House of the Arab Thought, Cairo.

COH, M., KASTELIC J.& PINTARIC S., (1998). A Biomechanical Model of the 100m Hurdles of Biekovec, Tack Coach No.142, Winter.

CORN, RJ & KNUDSON, D. (2003). Effect of elastic-cord towing on the kinematics of the acceleration phase of sprinting. Journal of Strength and Conditioning Research, 17(1), pp.72-75.

HOEGER, W, & HOEGER S, (2006). Principles and Labs for Fitness and Wellness, 8th, United States of America: Thomson Wadsworth .

IBRAHIM, S., (1998): Encyclopedia of the physiology of the track competitions, the center of the book for publication, Cairo.

KHALED, A., (2006): the perspective of kinesiology at the start of the competitions of the enemy, the fulfillment house for the minimum printing and publishing, Alexandria.

KUGLER, F. JANSHEN, L. (2010): Body position determines propulsive forces in accelerated running , Journal of Biomechanics, Volume 43, Issue 2,.

LEBLANC, J. S., GERVAIS, P. L. (2004). Kinematics of assisted and resisted

MERO, A; KOMI, PV & GREGOR, RJ (1992) : Biomechanics of sprint running: a review. Sports Medicine, 13 (6), pp.376-392.

MOHAMED, I. (2006): Fundamentals of Athletic Training, Library of the Egyptian Printing, Publishing and Distribution, Alexandria.

MOHAMED, O. (1993): Encyclopedia of athletics, "Training - Technique - Education - Arbitration", House of the pen, Kuwait.

MUFTI I. (2001): the modern sports training: Planning and Ntbaiq and driving, i 2, House of the Arab Thought, Cairo.

SHARKEY, B., GASKELL,K., STEVEN, E, (2006). Sport Physiology for Coaches, Champaign: Human kinetics.

TALHA, H. (1993): Biomechanics, House of the Arab Thought, Cairo.

TYLER, D. (2004): a biomechanical analysis of sprinters vs. distance runners at equal and maximal speeds , Master of Science, thesis submitted to the faculty of Brigham Young University.

ZAFEIRIDIS A, SARASLANIDIS P, MANOU V, IOAKIMIDIS P, DIPLA K, KELLIS S, (2007): The effects of resisted sled-pulling sprint training on acceleration and maximum speed performance,: J Sports Med Phys Fitness, NCBI-NLM-NIH, Sep;45(3):284-90.

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