Appendix (A) : Program

Table 2. Distribution of 8-week CrossFit workout program for basketball players.

Week	Intensity	session	Intensity	Intensity %	Organizing the Session				
					Warm-UP	Main Phase		Recovery	Session Time
						CF	Skills		
1		1		75%	15 min	30 min	25 min	10 min	80 min
		2		80%	15 min	35 min	30 min	10 min	90 min
		3		80%	15 min	35 min	30 min	10 min	90 min
		4		75%	15 min	35 min	20 min	10 min	80 min
2		5		85%	15 min	40 min	30 min	10 min	95 min
		6		90%	15 min	50 min	30 min	10 min	105 min
		7		75%	15 min	30 min	25 min	10 min	80 min
		8		80%	15 min	35 min	30 min	10 min	90 min
3		9		90%	15 min	45 min	35 min	10 min	105 min
		10		75%	15 min	30 min	25 min	10 min	80 min
		11		90%	15 min	50 min	35 min	10 min	110 min
		12		90%	15 min	50 min	40 min	10 min	115 min
4		13		75%	15 min	30 min	30 min	10 min	85 min
		14		80%	15 min	35 min	30 min	10 min	90 min
		15		85%	15 min	35 min	30 min	10 min	90 min
		16		75%	15 min	30 min	20 min	10 min	75 min
5		17		80%	15 min	35 min	30 min	10 min	90 min
		18		90%	15 min	40 min	35 min	10 min	100 min
		19		75%	15 min	30 min	25 min	10 min	80 min
		20		90%	15 min	45 min	35 min	10 min	105 min
6		21		90%	15 min	50 min	45 min	10 min	120 min
		22		75%	15 min	30 min	20 min	10 min	75 min
		23		90%	15 min	50 min	40 min	10 min	115 min
		24		90%	15 min	40 min	35 min	10 min	100 min
7		25		75%	15 min	30 min	25 min	10 min	80 min
		26		80%	15 min	30 min	35 min	10 min	90 min
		27		85%	15 min	30 min	30 min	10 min	85 min
		28		75%	15 min	30 min	25 min	10 min	80 min
8		29		90%	15 min	35 min	40 min	10 min	100 min
		30		80%	15 min	30 min	30 min	10 min	85 min
		31		75%	15 min	30 min	20 min	10 min	75 min
		32		80%	15 min	30 min	30 min	10 min	85 min

CF = CrossFit

Table 3. Distribution of an 8-week CrossFit workout Exercises, detailing exercises, reps, sets, and rest periods for basketball players.

Week	Day	CrossFit Exercises						Rest
		Exercises no./Sets/Reps/Rest BS						BE
1	Saturday	2/3/6/30s	34/3/6/40s	50/4/6/40s	70/3/8/40s	34/3/6/30s	30/3/7/35s	40-55 sec
	Monday	12/3/7/40s	48/3/8/35s	57/3/6/40s	66/3/8/30s	12/4/6//40s	40/3/10/40s	
	Wednesday	1/3/8/35s	41/3/8/30s	55/3/8/40s	64/3/8/40s	8/3/8/40s	68/4/10/40s	
	Thursday	11/3/8/50s	33/3/10/40s	57/3/8/40s	62/3/10/45s	66/4/8/40s	69/4/10/40s	
2	Saturday	3/3/10/40s	47/3/8/40s	56/3/8/45s	65/4/10/50s	13/3/8/45s	60/3/8/40s	
	Monday	14/3/10/45s	37/4/10/45s	51/3/8/50s	67/3/10/40s	18/3/10/55s	44/4/8/45s	
	Wednesday	4/3/10/55s	46/3/10/45s	60/3//8/55s	64/4/10/55s	2/4/8/60s	66/4/10/60s	
	Thursday	13/3/10/55s	39/4/10/60s	53/4/8/60s	63/4/10/60s	10/3/10/65s	70/4/10/65s	
3	Saturday	5/3/8/35s	37/3/8/40s	56/3//8/55s	68/3/10/50s	4/3/8/40s	64/4/6//40s	
	Monday	26/3/8/50s	35/4/10/45s	59/3/8/40s	66/4/10/55s	20/3/8/40s	65/4/10/55s	
	Wednesday	6/4/10/55s	47/3/8/35s	55/3/8/40s	69/4/6//40s	17/3//8/55s	32/3/8/50s	

	Thursday	7/3//8/55s	36/3/10/50s	49/4/6//40s	70/3/8/35s	21/3/8/50s	63/3//8/55s
4	Saturday	25/3/10/50s	40/4/6//40s	58/3/8/40s	16/3/8/40s	47/4/8/60s	66/4/10/55s
	Monday	8/4/10/55s	45/3/8/40s	60/3//8/55s	68/4/10/50s	22/3/10/40s	64/3/8/40s
	Wednesday	15/3/10/45s	42/3/8/40s	49/3/8/40s	70/4/10/55s	5/4/6//40s	61/3/10/45s
	Thursday	4/4/8/80s	9/3/10/75s	28/4/8/40s	37/4/6/50s	49/4/10/75s	65/4/10/35s
5	Saturday	24/3/8/40s	45/3/7/40s	58/3//8/55s	64/4/8/60s	23/3/10/40s	44/3//8/55s
	Monday	10/3//8/55s	46/4/6//40s	52/3/10/45s	62/3/10/40s	27/4/10/50s	4/4/10/55s
	Wednesday	21/3/10/40s	32/3/8/40s	57/4/8/60s	68/4/10/55s	14/4/10/45s	70/3/10/40s
	Thursday	16/3/10/50s	44/4/7/40s	52/4/8/50s	63/4/8/60s	24/3/8/50s	61/4/10/45s
6	Saturday	30/4/8/50s	34/4/10/45s	53/3/8/40s	61/4/10/55s	69/3/8/35s	25/3/8/40s
	Monday	17/3/7/40s	43/3/10/40s	61/3/10/40s	66/3/10/45s	55/3/10/45s	28/3/10/50s
	Wednesday	19/3/8/40s	37/3/10/50s	51/4/8/50s	52/4/8/60s	67/3//8/55s	29/4/10/45s
	Thursday	18/3/8/50s	39/4/10/45s	62/3//8/55s	69/4/8/60s	50/4/10/45s	19/3/10/40s
7	Saturday	29/4/10/55s	40/3/8/40s	53/3/10/45s	63/3/7/40s	26/4/6//40s	68/3/8/40s
	Monday	21/3/10/40s	35/4/8/60s	55/4/8/60s	70/4/10/55s	11/3/8/50s	48/4/8/60s
	Wednesday	20/3/7/40s	33/3/10/45s	56/3/8/40s	68/3/10/40s	9/3/10/40s	44/3/10/45s
	Thursday	28/4/10/45s	38/4/7/40s	50/3//8/55s	64/3/10/50s	19/3/10/40s	33/3//8/55s
8	Saturday	31/3/7/40s	37/4/8/60s	59/3/7/40s	67/4/8/60s	1/4/10/45s	69/4/10/55s
	Monday	27/4/10/45s	39/4/6//40s	60/3/10/45s	65/3/7/40s	3/3/8/50s	39/3/8/40s
	Wednesday	22/3/10/40s	48/3/8/50s	54/3/10/45s	63/3/10/40s	15/3/8/40s	32/4/10/45s
	Thursday	23/4/6//40s	47/4/10/45s	62/4/8/60s	69/4/10/55s	7/3//8/55s	34/4/8/60s

BE = Between Exercise, BS = Between Sets.

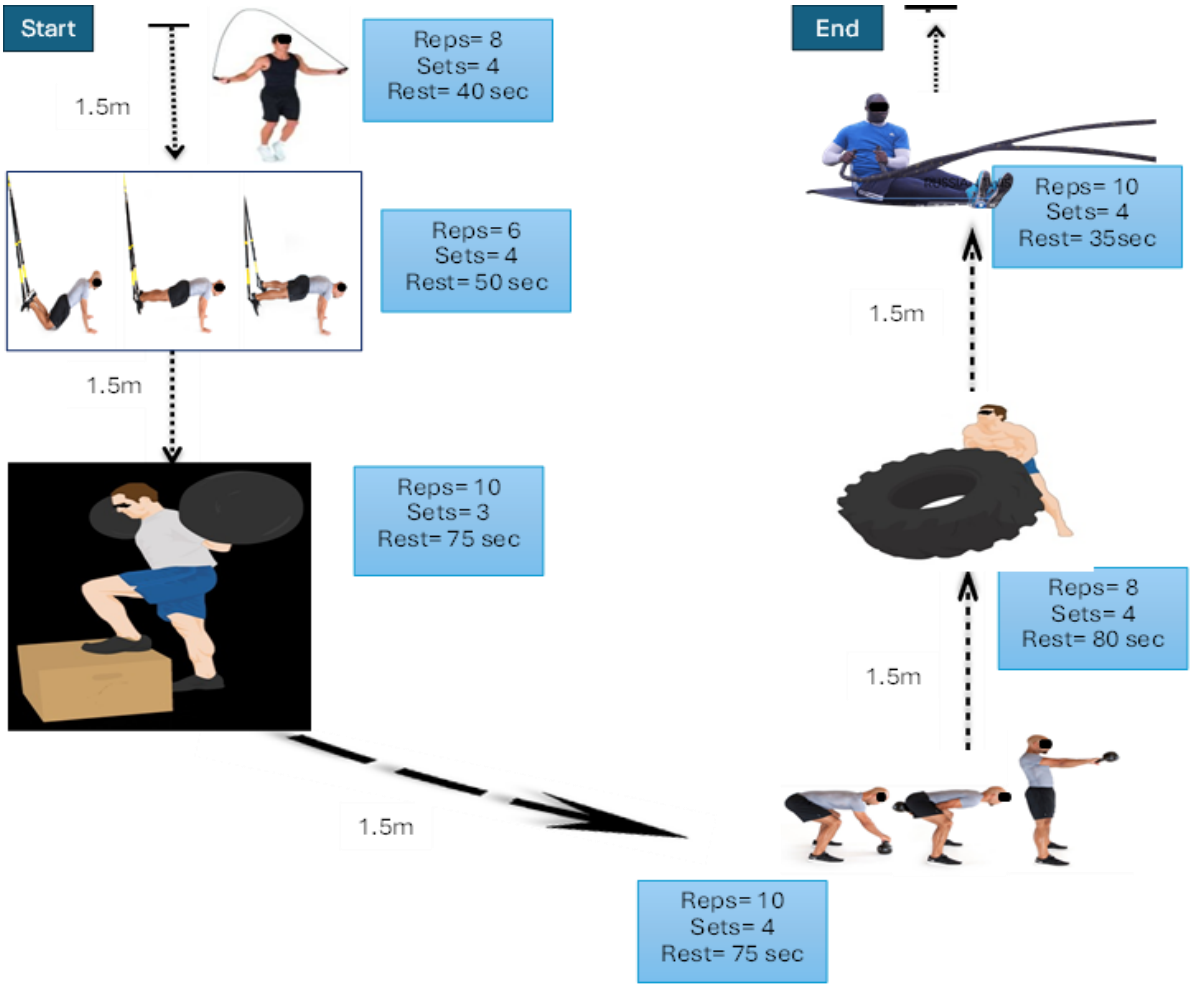

Figure 4. The model of CrossFit exercises for the main phase of training session

S. CrossFit training

	No.	Exercises
Weight & Plyometrics	1	
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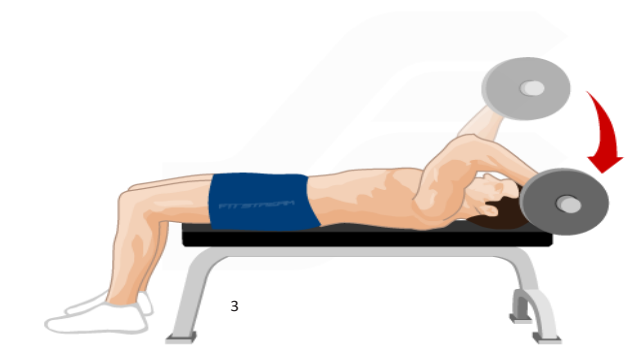
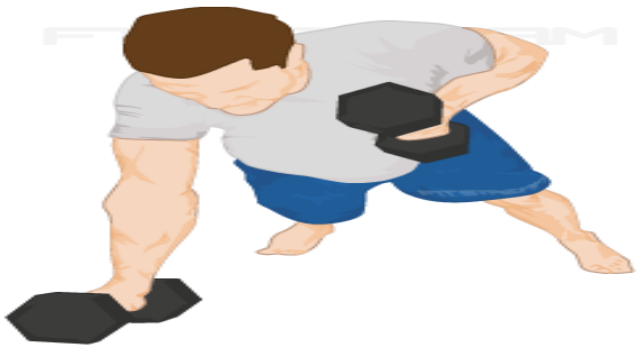
	5	

	6	
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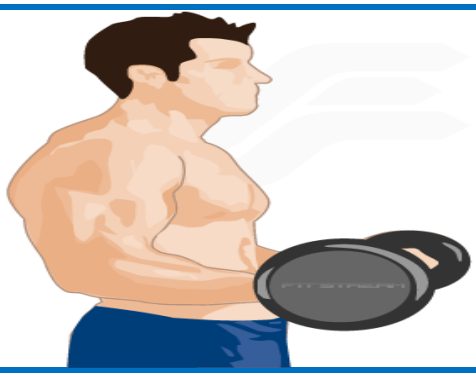
	11	
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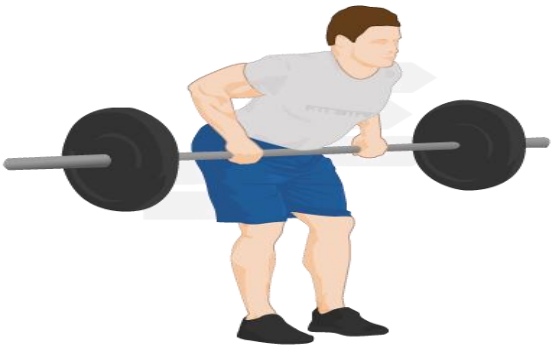
	13	
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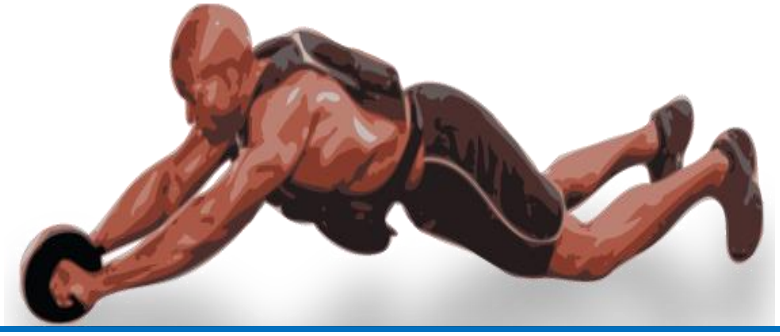
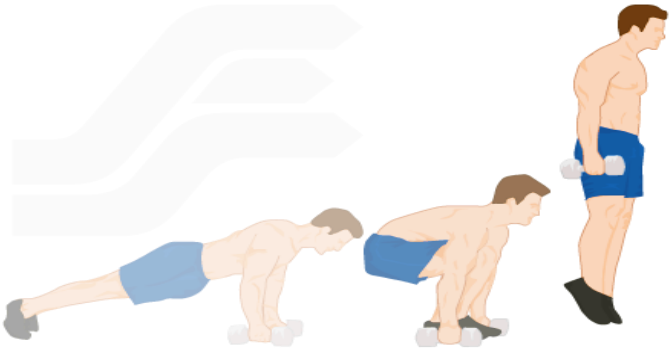
	16	
	17	
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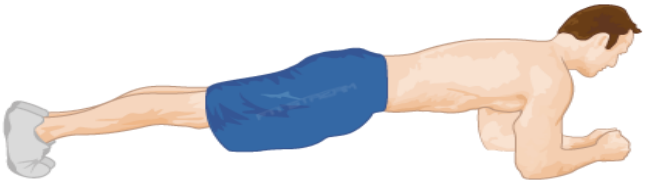
	19	
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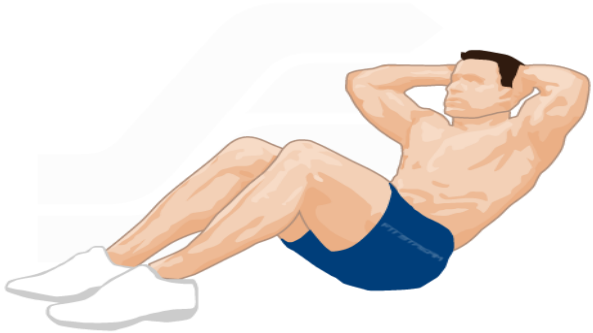
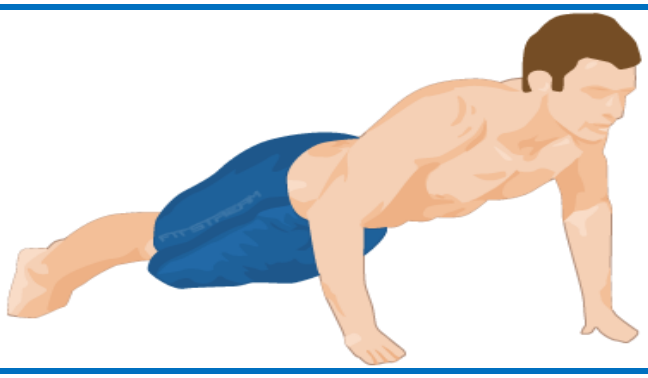
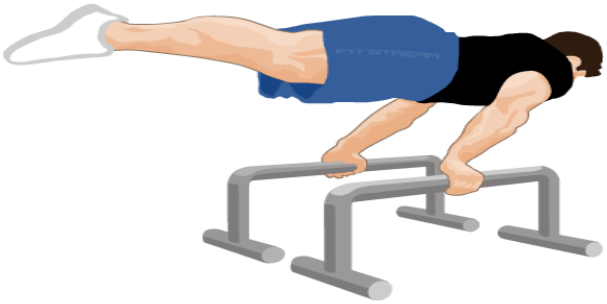
	21	
	22	
	23	
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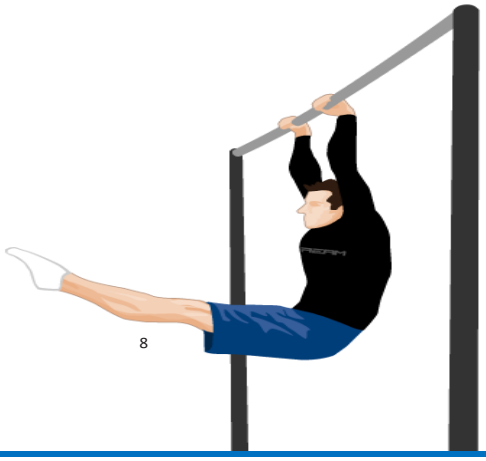
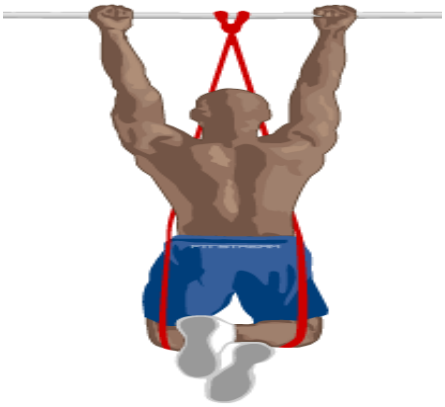
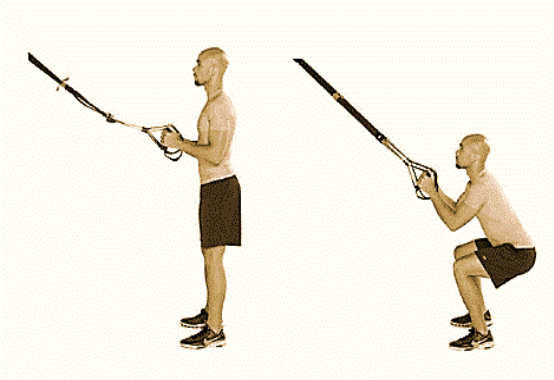
	30	

	31	
TRX	32	
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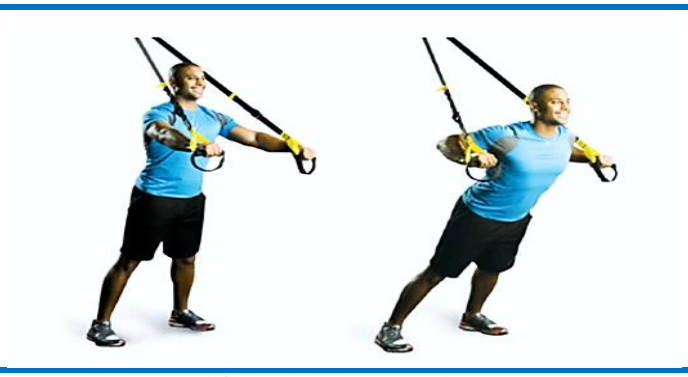
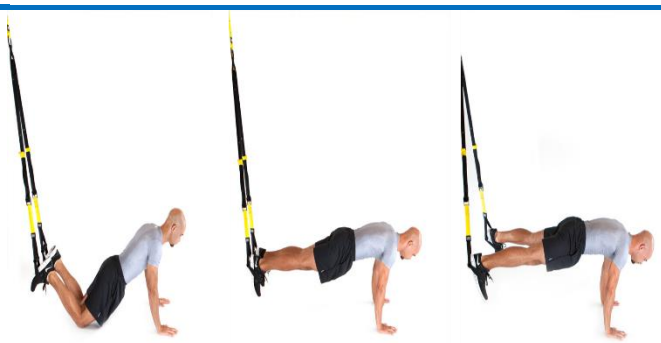
	36	
	37	
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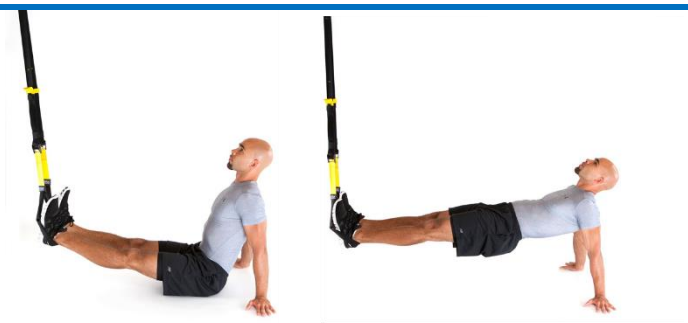
	39	
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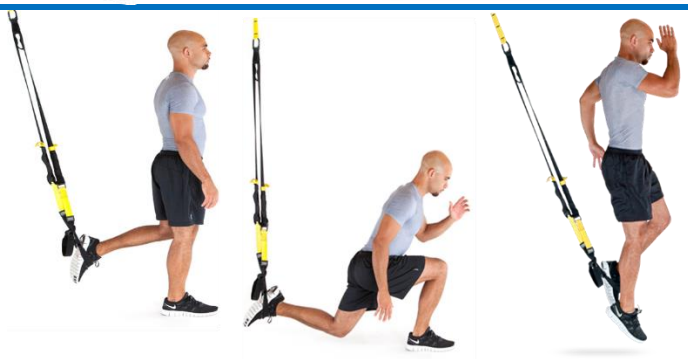
	42	
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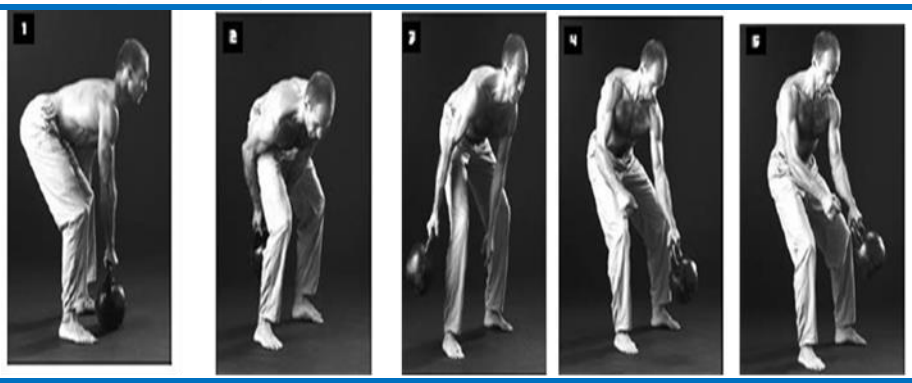
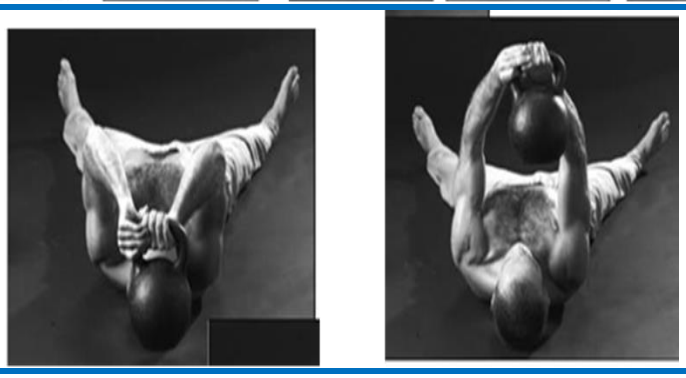
	57	
	58	
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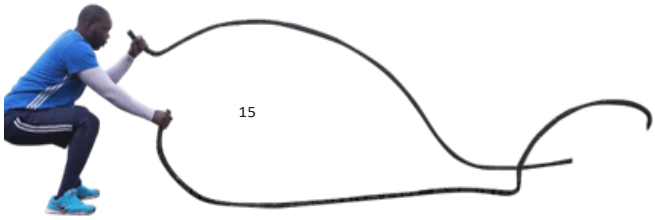
	64	

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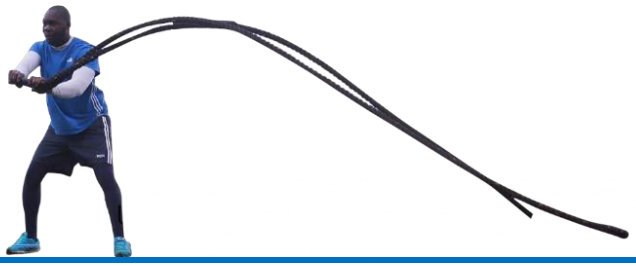
	67	
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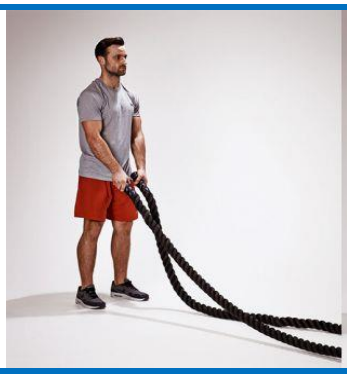
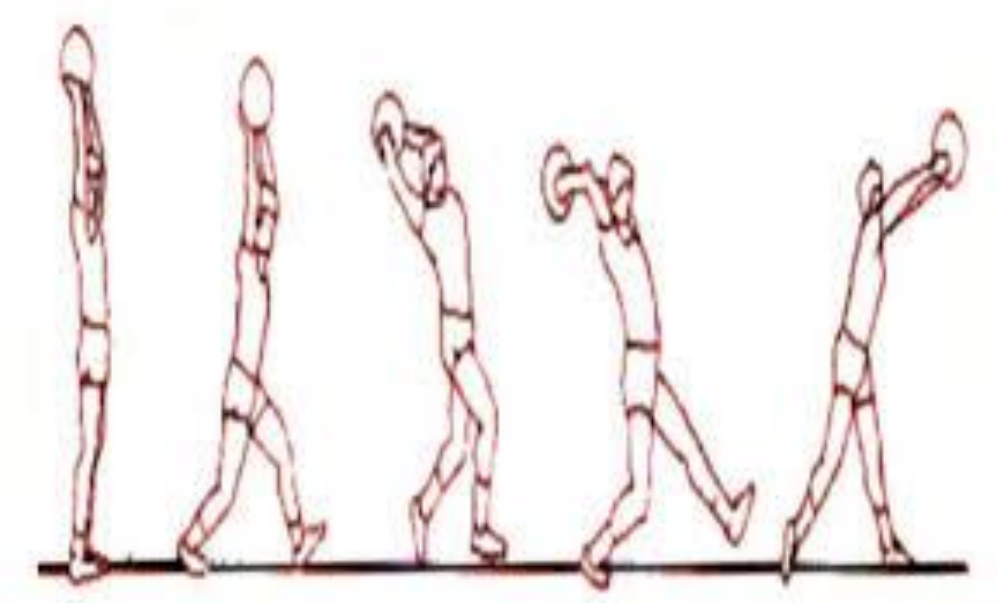
	70		

Appendix (B) : Testes

Vertec® Jump: The Vertical Jump Test was conducted using (JUMP USA, Sunnyvale, CA, USA) [24,25]. which consists of a set of rotating plastic vanes arranged in half-inch increments attached to an adjustable metal pole. Participants stood beneath the vertec, performing jumps from a uniform position, facing the vanes at a distance of 10 cm from the vertec, with their dominant shoulder aligned with the end of the vanes. Participants were instructed to jump as high as possible, using their dominant hand to reach and displace the highest plastic vane by swinging their arm at the peak of their jump. The jump height was calculated by counting the number of vanes displaced above the metal pole, which was then converted from inches to centimeters. Each participant performed three attempts, with a 30-second rest interval between each attempt, and the best jump height was recorded.

Medicine Ball Javelin Quadrathlon: Each subject stood with the feet parallel, and about shoulder width apart, slightly staggered in the throwing direction. They cupped the ball in both their hands and placed it in front of the body of the football and there was a general teamwork effort to push the ball forward. In the view of three-step throw, the athlete started the throw with feet joined together and was allowed two steps with the ball into the throwing box the last step was allowed after the ball was released. This distance was taken from the front foot, at the time of release of the ball to the time the ball touched the ground. An assistant took down the measurements from each throw made by the participant. Every subject was given the chance to take three shots, and the longest distance was recorded [28,29].



Plank Test (P): This is a test to measure the strength of the core muscles. The aim is to maintain the elevated plank position for as long as possible. The body is flat on the ground with the elbows and forearms, the legs are straight, and the weight is supported by the toes. The hips are lifted off the ground to create a straight line from the head to the toes. Once the subject is in the correct position, the stopwatch is started. The head should be facing the ground and not forward. The test ends when the subject is unable to maintain a straight back and the hips are lowered. The test is calculated by the time it takes the participant to be in the correct position. The participant is given two attempts, and the best attempt is scored [25,26].

Rebound Teste: The player is asked to stand at the starting point 1 meter away from the Basketball Rebound Height Tester Model GA-5503 (Changsha, Hunan Province, China) (figure 2.). When the start signal is heard, the player must run towards the device. The player jumps vertically to try to catch the placed basketball. The player is allowed three attempts to achieve the highest jump possible. The highest height achieved by the player in the three attempts is recorded.

Modified T-test (footwork skill): Measures the rate at which the feet are moved either forward, sideways or in backward manner. The test involves a tape measure, marker cones; a stopwatch, Basketball, and FitLight. Where, Four cones (5 yards = 4. 57 m, 10 yards = 9. 14 m) are set up (see figure 3.). The subject starts at cone A. On the sound of the timer, the subject immediately goes to the side of the cone light with Fitlight and rapidly touches the light off with his right hand. He then banks towards the other side and then changes sideways to the other illuminated cone, and then taps on the light to switch it off and this is done with his left hand. He then sways left and touches the side of the third illuminated cone with his right hand before going to cone A. The process is repeated on all four cones. The attempt will not be counted if the subject steps one foot in front of the other during the shuffle, or if he/she does not touch the correct cone light. To the nearest 0 is counted the best of the three successful attempts of time. 1 second[27].

Table 4. Descriptive statistics of experimental and control groups in Body composition, muscle strength, physiological adaptations, rebounding, and footwork skills

Group	Outcome measures	Pre	Post	ES	Sig.	Imp. %

		Mean	Std.	CV %	Mean	Std.	CV %			
EG	**BMI (kg)**	21.48	1.51	7.03	19.47	0.78	4.01	0.43	<0.01	9.36
	BFP%	20.86	1.33	6.38	19.23	0.84	4.37	0.36	<0.01	7.81
	FM (kg)	16.77	0.74	4.41	14.97	0.51	3.41	0.68	<0.01	10.73
	BFI(kg/m^2)	3.88	0.32	8.25	3.14	0.07	2.23	0.74	<0.01	19.07
	FFM (kg)	45.06	0.59	1.31	49.23	0.45	0.91	0.94	<0.01	9.25
	VJ (cm)	51.47	1.10	2.14	63.24	1.68	2.66	0.95	<0.01	22.87
	MBJQ (m)	5.57	0.16	2.87	7.46	0.14	1.88	0.98	<0.01	33.93
	P (s)	123.05	1.12	0.91	147.54	1.82	1.23	0.99	<0.01	19.90
	VO2Max (ml/kg/min)	58.08	1.43	2.46	67.58	1.27	1.88	0.93	<0.01	16.36
	MK (w)	153.13	4.38	2.86	188.00	6.91	3.68	0.91	<0.01	22.77
	RT (cm)	259.88	11.24	4.33	280.38	8.05	2.87	0.54	<0.01	7.89
	FW (s)	13.26	0.33	2.49	10.86	0.25	2.30	0.95	<0.01	18.10
CG	**BMI (kg)**	21.70	1.53	7.05	20.95	1.37	6.54	0.07	<0.01	3.46
	BFP%	20.67	1.17	5.66	20.27	1.12	5.53	0.03	<0.01	1.94
	FM (kg)	16.77	0.74	4.41	16.14	0.75	4.65	0.16	<0.01	3.76
	BFI(kg/m^2)	3.89	0.31	7.97	3.45	0.34	9.86	0.33	<0.01	11.31
	FFM (kg)	45.06	0.59	1.31	45.83	0.45	0.98	0.37	<0.01	1.71
	VJ (cm)	51.30	1.09	2.12	56.67	1.17	2.06	0.86	<0.01	10.47
	MBJQ (m)	5.57	0.16	2.87	6.51	0.17	2.61	0.90	<0.01	16.88
	P (s)	123.05	1.12	0.91	134.42	3.73	2.77	0.82	<0.01	9.24
	VO2Max (ml/kg/min)	58.09	1.42	2.44	59.92	0.61	1.02	0.43	<0.01	3.15
	MK (w)	153.06	4.46	2.91	160.06	3.42	2.14	0.45	<0.01	4.57
	RT (cm)	259.94	9.20	3.54	265.25	8.45	3.19	0.09	<0.01	2.04
	FW (s)	13.26	0.33	2.49	12.64	0.32	2.53	0.50	<0.01	4.68

Key: EG—Experimental Group; CG—Control Group; Min—Minimum; Max—Maximum; BMI— Body fat index; BFP%—Body fat percentage; FM—Fat mass; BFI— Body fat index; FFM—Fat-free mass; VO2Max —maximal aerobic capacity; MK—Margaria-Kalamen (MK) Staircase Test; MBJQ—Medicine Ball Javelin Quadrathlon; P—Plank test; RT—Rebound test; FW—footwork; CV—coefficient of variatio;ES— Effect size; Imp. % — improvement percent.

Table 5. Post-hoc analyses incorporated analysis of variance (ANOVA) as well as the ηp2 values for Measurement, Group, and the Interaction (Measurement Group).

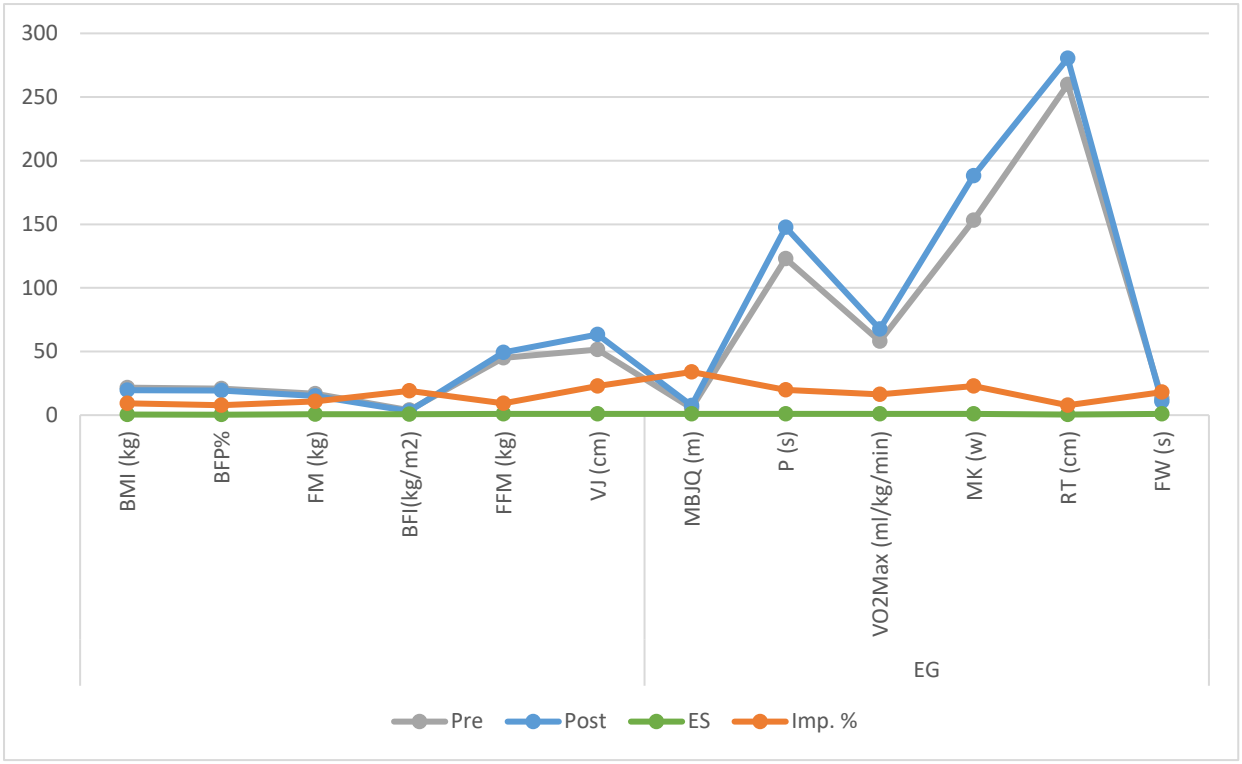
Outcome measures	Measurement			Group			Intercept			Group ×Time Interaction		
	F	P	ηp^2	F	P	ηp^2	F	P	ηp^2	F	P	ηp^2
BMI (kg)	41.77	<0.01	0.580	2.32	0.139	0.072	8819.53	<0.01	0.997	17.70	<0.01	0.370
BFP%	117.31	<0.01	0.796	1.189	0.284	0.038	10856.288	<0.01	0.997	42.98	<0.01	0.589
FM (kg)	361.62	<0.01	0.923	6.21	0.018	0.172	18879.84	<0.01	0.998	84.45	<0.01	0.738
BFI(kg/m^2)	209.63	<0.01	0.875	3.11	0.088	0.094	6231.01	<0.01	0.995	13.23	<0.01	0.306
FFM (kg)	662.06	<0.01	0.957	116.08	<0.01	0.795	342691.38	<0.01	0.999	314.29	<0.01	0.913
VJ (cm)	485.63	<0.01	0.942	118.87	<0.01	0.798	120328.25	<0.01	0.999	222.09	<0.01	0.881
MBJQ (m)	336.20	<0.01	0.918	110.46	<0.01	0.786	60305.45	<0.01	0.999	148.98	<0.01	0.832
P (s)	2604.49	<0.01	0.989	63.97	<0.01	0.681	69946.29	<0.01	0.999	363.71	<0.01	0.924
VO2Max (ml/kg/min)	1871.76	<0.01	0.984	111.13	<0.01	0.787	77261.94	<0.01	0.999	212.41	<0.01	0.876
MK (w)	1163.17	<0.01	0.975	126.26	<0.01	0.808	204357.97	<0.01	0.999	155.89	<0.01	0.839
RT (cm)	309.04	<0.01	0.912	5.49	0.026	0.155	27514.46	<0.01	0.999	106.99	<0.01	0.781
FW (s)	670.83	<0.01	0.957	91.68	<0.01	0.753	73177.45	<0.01	0.999	229.74	<0.01	0.884

Key: BMI= Body fat index; BFP%= Body fat percentage; FM= Fat mass; BFI= Body fat index; FFM= Fat-free mass; VO2Max= maximal aerobic capacity; MK= Margaria-Kalamen (MK) Staircase Test; MBJQ= Medicine Ball Javelin Quadrathlon; P= Plank test; RT= Rebound test; FW= footwork; ηp^2 = Effect siz.

Table 6. Mean, standard deviation, and percentage of improvement in post-test measurements of experimental and control groups.

Outcome measures	Experimental		Control		ES	D. Imp.	CI		P
	Mean	Std. Deviation	Mean	Std. Deviation			Lower	Upper	
BMI	19.47	0.78	20.95	1.37	0.32	5.9%	-2.280	-0.670	<0.01
BFP%	19.23	0.84	20.27	1.12	0.23	5.87%	-1.751	-0.320	<0.01
FM	14.97	0.51	16.14	0.75	0.47	6.97%	-1.634	-0.711	<0.01
BFI	3.14	0.07	3.45	0.34	0.29	7.76%	-0.489	-0.131	<0.01
FFM	49.23	0.45	45.83	0.45	0.94	7.54%	3.082	3.727	<0.01
VO2Max	67.58	1.27	59.92	0.61	0.94	12.4%	6.945	8.383	<0.01
MK	188.00	6.91	160.06	3.42	0.88	17.05%	24.003	31.872	<0.01
VJ	63.24	1.68	56.67	1.17	0.85	10.66%	5.526	7.616	<0.01
MBJQ	7.46	0.14	6.51	0.17	0.91	13.21%	0.840	1.065	<0.01
P	147.54	1.82	134.42	3.73	0.84	18.2%	11.005	15.246	<0.01
RT	280.38	8.05	265.25	8.45	0.47	5.85%	9.167	21.083	<0.01
FW	10.86	0.25	12.64	0.32	0.91	13.42%	-1.976	-1.566	<0.01

D. Imp. — Differences in improvement percent.



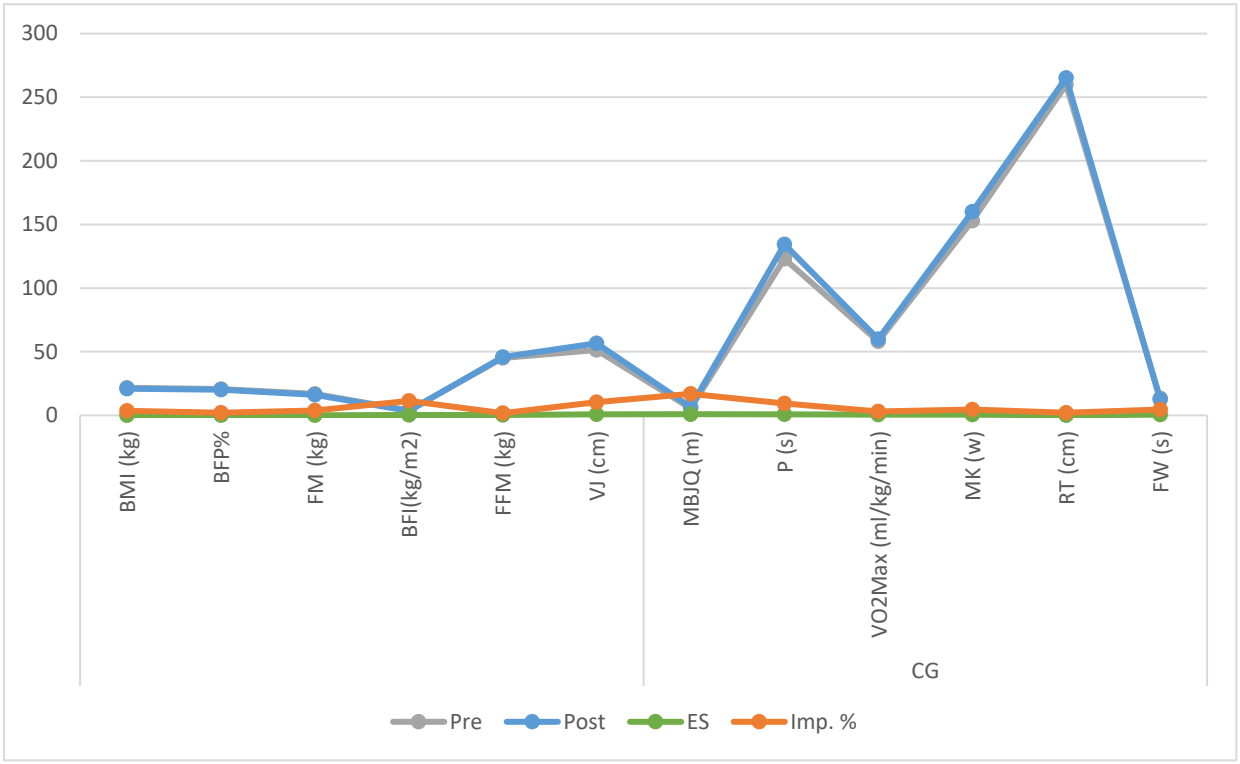


Figure 5. Comparison between the experimental group and the control group on the study variables before and after the measurement.

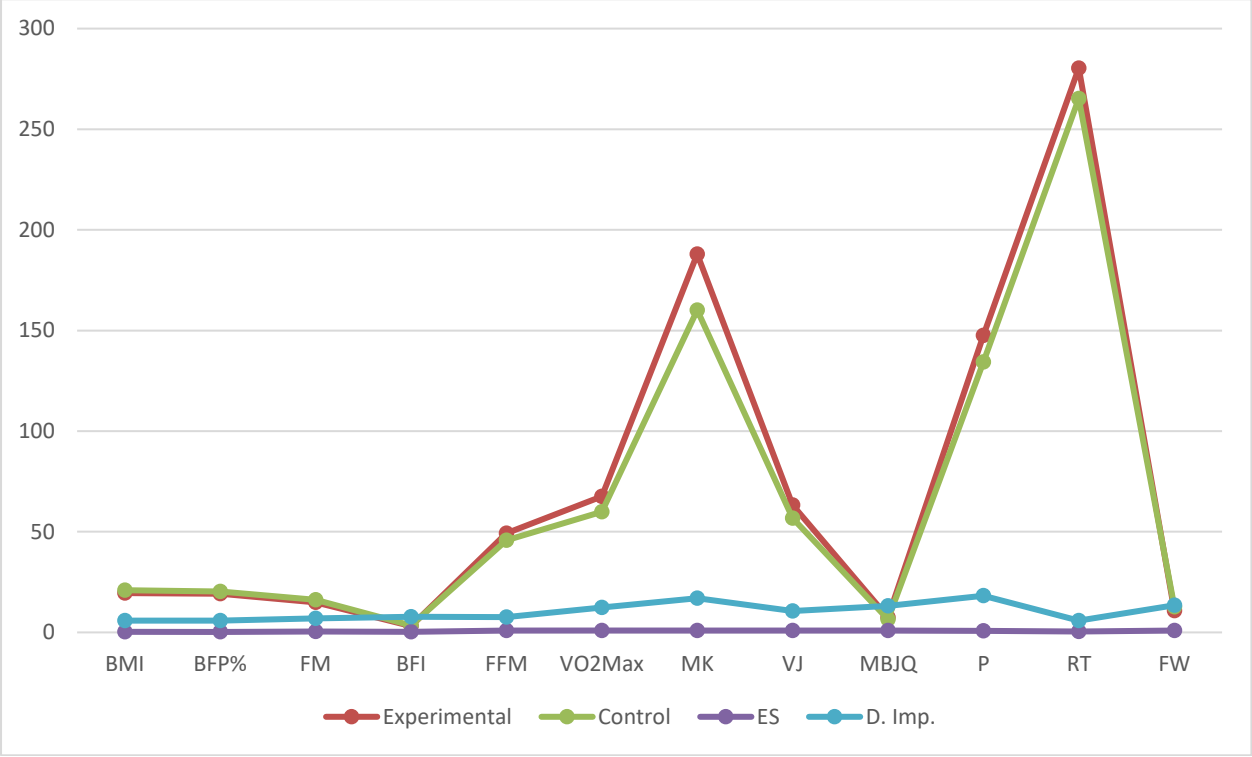


Figure 6. Statistical differences of the dimensional measurements and the improvement rates between the experimental and control groups.