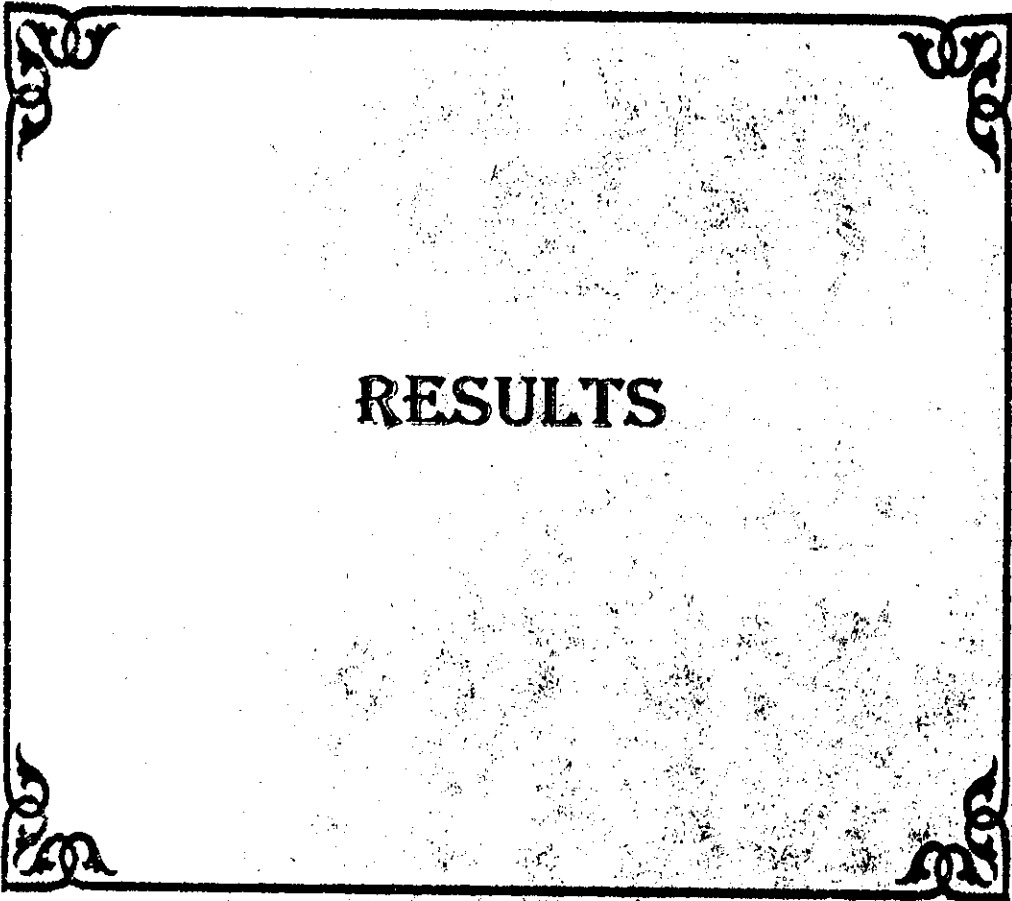




RESULTS

RESULTS

This study comprised 420 volleyball players. They were 300 males (71.4 %) and 120 females (28.6 %).

A- Men's Tournament :

During the 1993-1994 season, 76 players reported a total of 84 injuries. During competitions, 303 hours of volleyball were played. The injury rate was 0.28 / hour.

A breakdown of injuries by anatomical site showed that the ankle was the most frequently injured joint 24% (20 of 84), followed by the knee 19 % (16 of 84), hands and wrists 17 % (14 of 84), low back 14 % (12 of 84) and shoulder 11 % (9 of 84). There was no significant difference ($p > 0.05$) between male and female volleyball players as regards to the anatomical site of injury (Table 10 and Fig. 1).

A breakdown of the injuries by type showed that strain accounted for 36% (30 of 84) of injuries, sprains for 27% (23 of 84) and inflammation and overuse (together) for 26% (22 of 84) of the reported injuries. There was no significant difference ($p > 0.05$) between male and female volleyball players as regards to the type of injury (Table 11 and Fig. 2).

Position on the court and attempted play at the time of injury affected the rate of injury. Position 3 (middle hitter / middle blocker) had the highest rate of injury, followed by position (4) and position (2). There was no significant difference ($P > 0.05$) between male and female

volleyball players according to injuries related to position (Table 12 and Fig. 3a & 3b).

Eighty five percent (75 /88) of the injuries were related to a particular type of volleyball maneuvers. Attempt to block accounted for 55% (41/75) of these injuries. Attempt to hit accounted for 25% (19/75). Attempt to defense accounted for 15 % (11/ 75). There was no significant difference ($p > 0.05$) between male and female volleyball players

according to injuries related to maneuvers (Table 13 and Fig. 4).

B- Female Tournament :

During the 1993-1994 season, 11 female players reported a total of 13 injuries. During competitions, 36 hours of volleyball were played. The injury rate was 0.36 / hour.

A breakdown of the injuries by anatomical site showed that the ankle was the most frequently injured area 31% (4 of 13), followed by the knee 23% (3 of 13), hands and wrists 15% (2 of 13), thigh 15% (2 of 13), low back 8% (1 of 13) and shoulder 8% (1 of 13) (Table 10 and Fig. 1).

A breakdown of the injuries by type showed that strains accounted for 46% (6 of 13) of injuries, sprains for 39% (5 of 13) and inflammation and overuse together for 15% (2 of 13) of the reported injuries (Table 11 and Fig. 2).

Position on the court and attempted play at the time of injury

had the highest rate of injury, followed by position (4) and position (1) (Table 12 and Fig. 3).

All injuries were related to a particular type of volleyball maneuver. Attempting to block accounted for 54% (7/13) of these injuries. Attempting to hit accounted for 23% (3/13) and defense for 15% (2/13) (Table 13 and Fig. 4).

Table (1) : Mean ($\bar{X}$) and Standard deviation ($\pm$ S.D.) of age among the studied Egyptian volleyball players (EVBPs) according to sex.

Age (y)	Sex	Males	Females
$(\bar{X})$		23.91	20.76
$\pm$ S.D.		1.72	2.16
t		5.91	
p		< 0.01	

Table (2) : Mean $\pm$ S.D. of age among the studied EVBPs according to type of injury.

Age Type of injury	$(\bar{X})$	$\pm$ S.D.	Range	
			Minimum	maximum
Strain	23.16	2.23	17.00	27.00
Sprain	23.57	1.98	19.00	28.00
Inflam.and overuse	23.95	2.15	18.00	28.00
Contusion	23.00	1.41	21.00	24.00
Fracture	22.50	0.70	22.00	23.00
Dislocation	24.33	1.52	23.00	26.00
F	0.646			
P	> 0.05			

Table (3) : Mean $\pm$ S.D. of age among the studied EVBPs according to anatomical site of injury.

Age (y) Anatomical site	$\bar{X}$	$\pm$ S.D.	Range	
			Minimum	Maximum
Ankle	23.3	± 2.1	19.0	28.0
Knee	23.6	± 2.4	18.0	28.0
Hand, wrist	23.5	± 1.9	20.0	27.0
Back	23.1	± 2.0	19.0	26.0
Shoulder	24.3	± 1.9	20.0	26.0
Thigh	22.7	± 2.5	17.0	25.0
Abd.ms.	26.0	± 0.0	26.0	26.0
Foot	23.5	± 1.3	22.0	25.0
Elbow	23.5	± 2.1	22.0	25.0
F	0.551			
P	> 0.05			

Table (4):Mean and standard deviation ($\pm$ S.D.) of duration of participation among the studied EVBPs according to sex.

Duration of participation (y)	Sex	
	Males	Females
$(\bar{X})$	4.97	4.00
$\pm$ S.D.	1.49	1.29
t	2.22	
p	< 0.05	

Table (5) : Mean $\pm$ S.D of duration of participation among the studied EVBPs according to type of injury.

Type of Injury	Duration of participation (y) ($\bar{X}$)	$\pm$ S.D.	Range	
			Minimum	maximum
Strain	4.94	1.49	2.00	10.00
Sprain	5.00	1.65	3.00	10.00
Inflam. and overuse	4.62	1.46	2.00	9.00
Contusion	4.75	0.95	4.00	6.00
Fracture	4.50	0.70	4.00	5.00
Dislocation	4.33	2.08	2.00	6.00
F	0.277			
P	> 0.05			

Table (6) : Mean $\pm$ S.D of duration of participation among the studied EVBPs according to anatomical site of injury.

Anatomical site of injury	Duration of participation	$(\bar{X})$	$\pm$ S.D.	Range	
				Minimum	maximum
Ankle	(n = 24)	4.9	± 1.6	3.0	10.0
Knee	(n = 19)	5.0	± 2.0	2.0	10.0
Hand, wrist	(n = 16)	5.1	± 1.3	3.0	8.0
Back	(n = 13)	5.1	± 1.3	3.0	8.0
Shoulder	(n = 10)	4.6	± 1.2	3.0	6.0
Thigh	(n = 8)	4.1	± 1.4	2.0	6.0
Foot	(n = 4)	4.2	± 1.0	3.0	5.0
Elbow	(n = 2)	4.0	± 0.0	4.0	4.0
Abd. ms.	(n = 1)	6.0	± 0.0	6.0	6.0
F		0.586			
P		> 0.05			

Table (7) : Side of injury among the studied EVBPs according to sex.

Side of injury \ Sex	Males		Females		Total	
	No.	%	No.	%	No.	%
Rt	44	61.97	8	66.67	52	62.65
Lt	27	38.03	4	33.33	31	37.35
Total	71	100.0	12	100.0	83	100.0

$$X^2 = 0.097$$

$$P > 0.05$$

Table (8) : Side of injury among the studied EVBPs according to type of injury.

Side Type of injury	Rt		LT		Total	
	No.	%	No.	%	No.	%
Strain	14	26.92	9	29.03	23	27.71
Sprain	14	26.92	13	41.94	27	32.53
Inflam. and overuse	18	34.62	6	19.34	24	28.92
Contusion	3	5.77	1	3.23	4	4.82
Fracture	2	3.85	0	0	2	2.41
Dislocation	1	1.92	2	6.46	3	3.61
Total	52	62.65	31	37.35	83	100.0

Table (9) : Side of injury among the studied EVBPs according to anatomical site of injury.

Side anatomical site	Rt		Lt		Total	
	No.	%	No.	%	No.	%
Ankle	13	25.00	11	35.48	24	28.92
knee	8	15.38	11	35.48	19	22.89
Hand, wrist	10	19.23	6	19.35	16	19.28
Shoulder	9	17.31	1	3.23	10	12.05
Thigh	7	13.46	1	3.23	8	9.64
Foot	3	5.77	1	3.23	4	4.82
Elbow	2	3.85	0	0	2	2.41
Total	52	62.65	31	37.35	83	100.0

Table (10) : Anatomical site of injury among the studied EVBPs
according to sex.

Anatomical site	Sex		Males		Females		Total		Z	P
	No.	%	No.	%	No.	%	No.	%		
Ankle	20	23.81	4	30.77	24	24.74	0.541	> 0.05		
Knee	16	19.05	3	23.08	19	19.59	0.341	> 0.05		
Hand, wrist	14	16.67	2	15.38	16	16.49	0.116	> 0.05		
Back	12	14.29	1	7.69	13	13.40	0.649	> 0.05		
Shoulder	9	10.71	1	7.69	10	10.31	0.333	> 0.05		
Thigh	6	7.14	2	15.38	8	8.25	1.005	> 0.05		
Foot	4	4.76	0	0	4	4.12	0.804	> 0.05		
Elbow	2	2.38	0	0	2	2.06	0.562	> 0.05		
Abd, ms.	1	1.19	0	0	1	1.03	0.393	> 0.05		
Total	84	100.0	13	100.0	97	100.0	--	--		

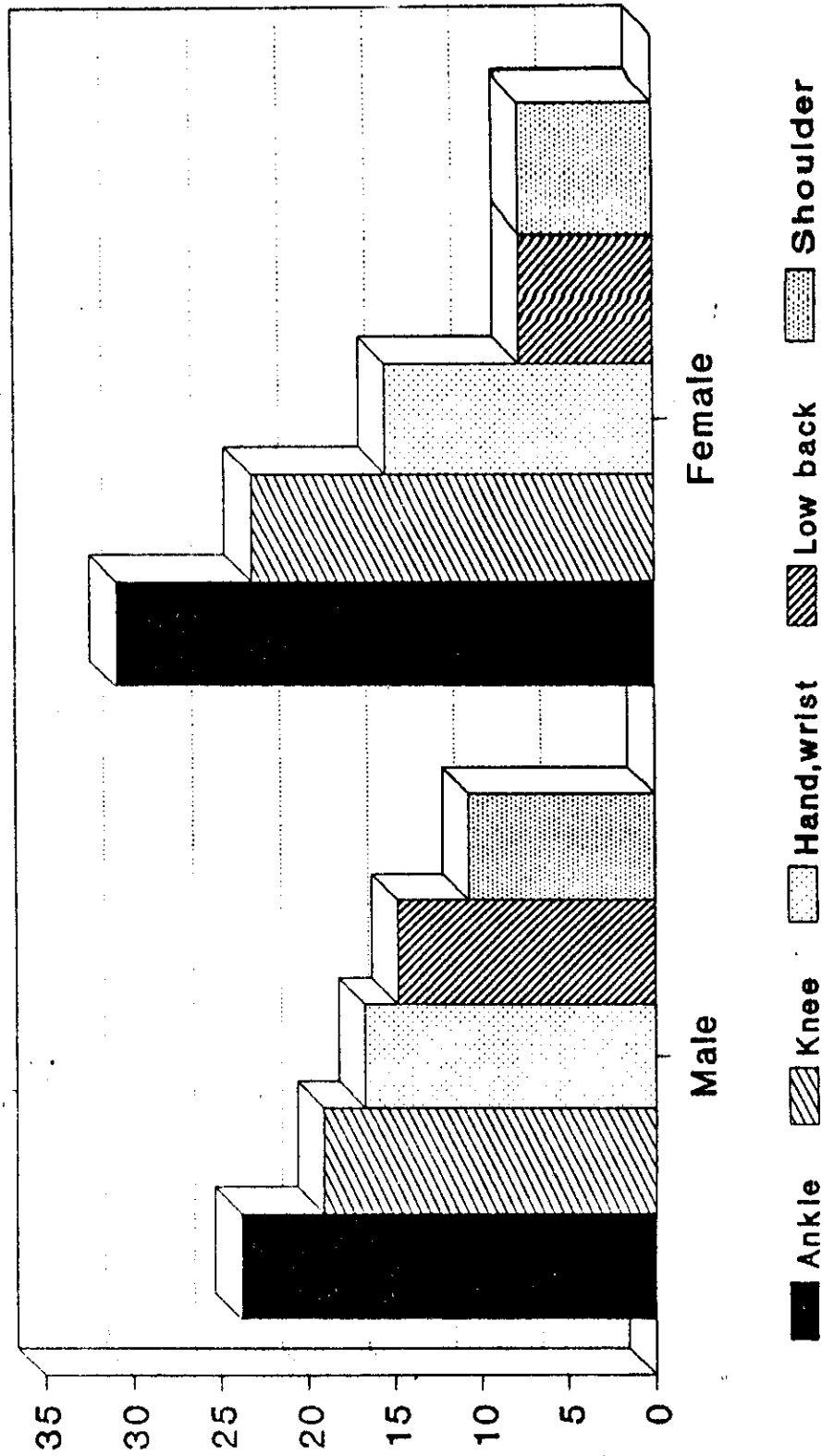


Fig.(1): Anatomical site of injury among the studied EVBPs according to sex

Table (11) : Type of injury among the studied EVBPs according to sex.

Type of injury	Males		Females		Total		Z	P
	No.	%	No.	%	No.	%		
Strain	30	35.72	6	46.16	36	37.12	0.725	>0.05
Sprain	23	27.38	5	38.46	28	28.87	0.820	>0.05
Inflam., overuse	22	26.19	2	15.38	24	24.74	0.840	>0.05
Contusion	4	4.76	0	0	4	4.12	0.804	>0.05
Dislocation	3	3.57	0	0	3	3.09	0.692	>0.05
Fracture	2	2.38	0	0	2	2.06	0.562	>0.05
Total	84	100.0	13	100.0	97	100.0	--	--

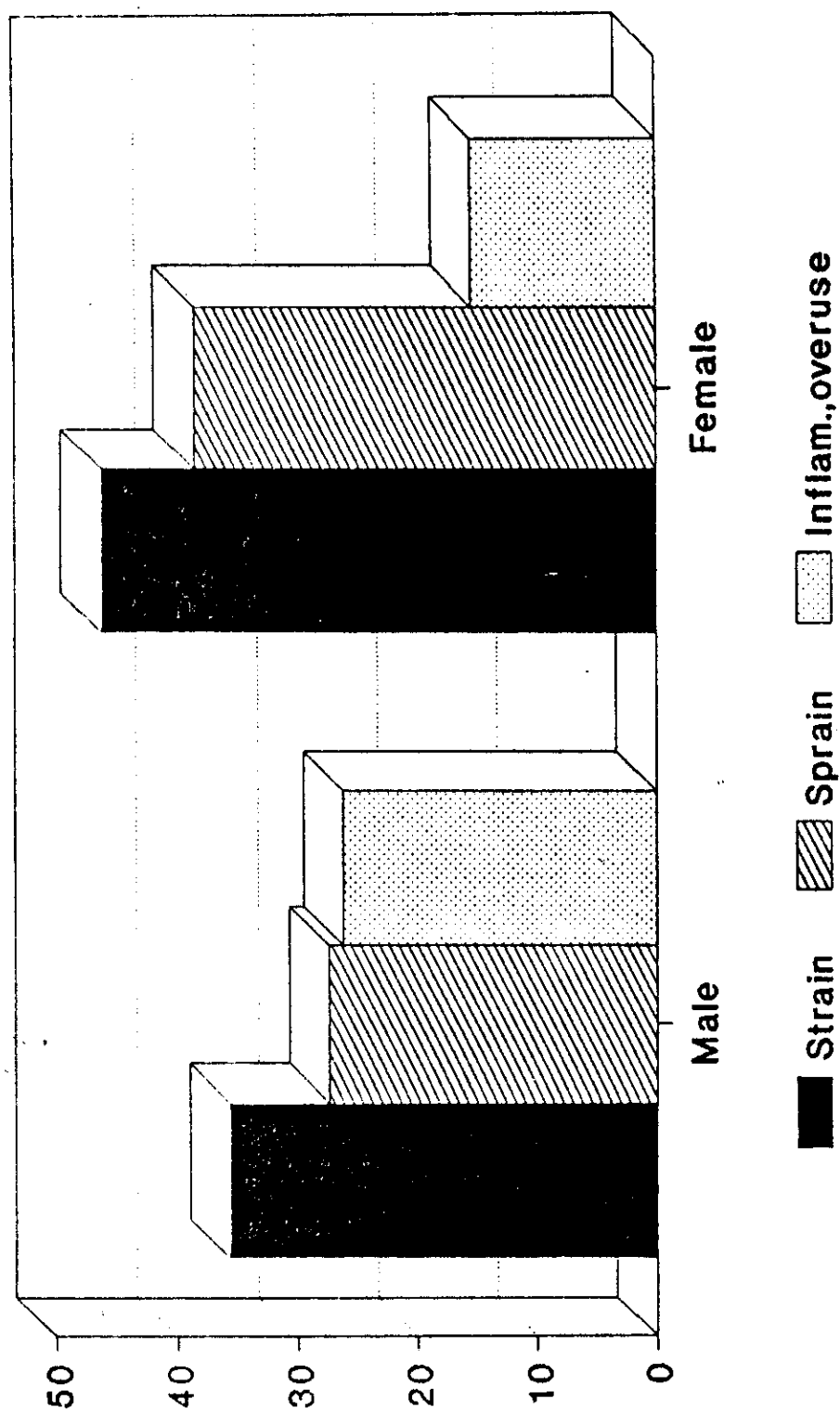


Fig.(2): Type of injury among the studied EVBPs according to sex.

Table (12) : Positions at the time of injury among the studied EVBPs according to sex.

Sex Position	Males		Females		Total		Z	P
	No.	%	No.	%	No.	%		
1	4	5.63	2	15.38	6	7.14	1.255	> 0.05
2	11	15.49	1	7.69	12	14.29	0.739	> 0.05
3	31	43.66	6	46.15	37	44.05	0.166	> 0.05
4	17	23.94	3	23.08	20	23.81	0.067	> 0.05
5	3	4.23	0	0	3	3.57	0.755	> 0.05
6	5	7.04	1	7.69	6	7.14	0.084	> 0.05
Total	71	100.0	13	100.0	84	100.0	--	--

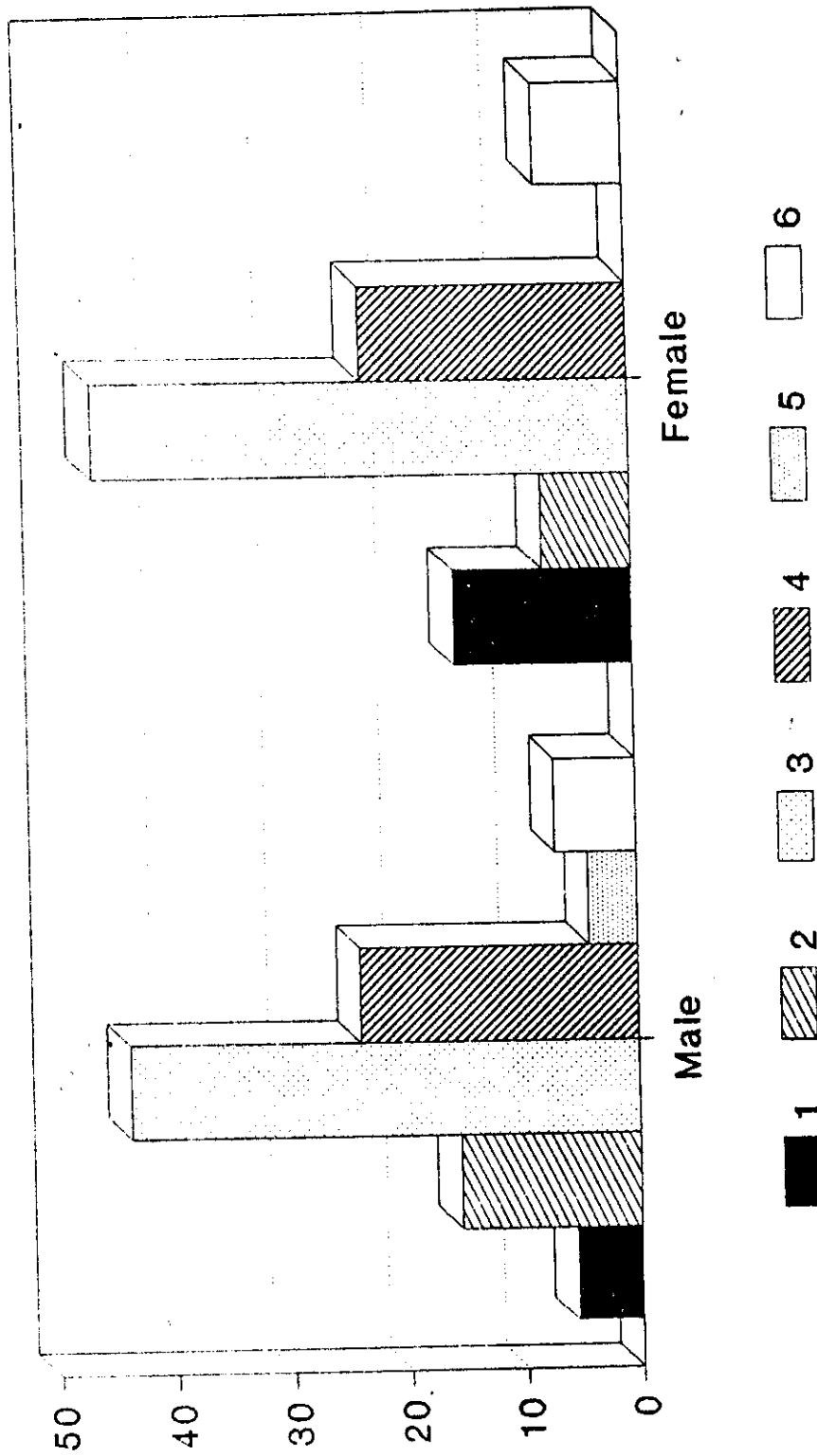


Fig.(3): Positions at the time of injury among the studied EVBPs according to sex.

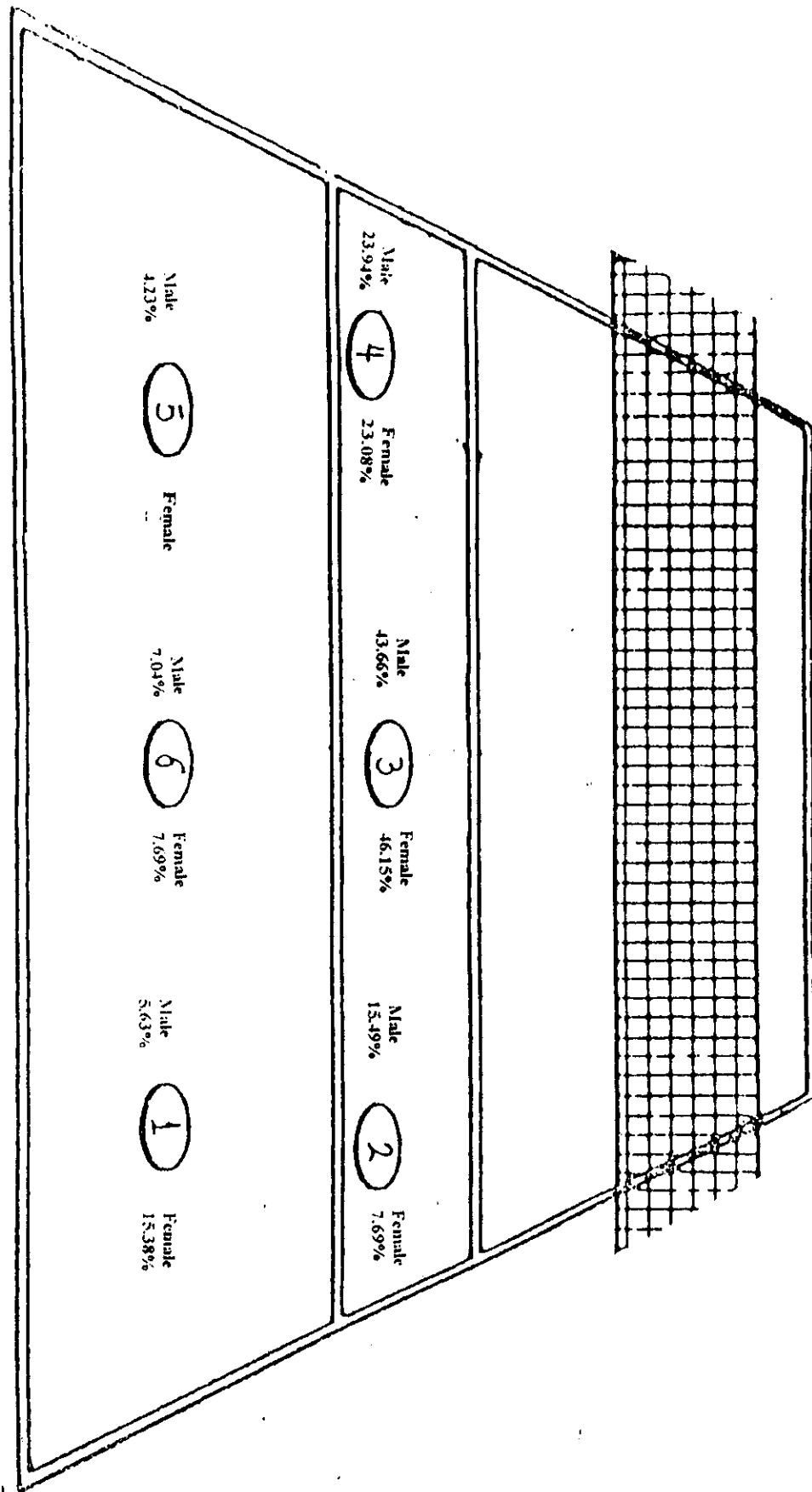


Fig. (3b): Positions at the time of injury among the studied EVBPs according to sex.

Table (13) : Maneuvers at the time of injury among the studied EVBPs according to sex.

Maneuver \ Sex	Males		Females		Total		Z	P
	No.	%	No.	%	No.	%		
Block	41	54.67	7	53.85	48	54.55	0.055	> 0.05
Hit	19	25.33	3	23.08	22	25.00	0.173	> 0.05
Defense	11	14.67	2	15.38	13	14.77	0.067	> 0.05
Serve	4	5.33	1	7.69	5	5.68	0.339	> 0.05
Total	75	85.23	13	14.77	88	100.00	--	--

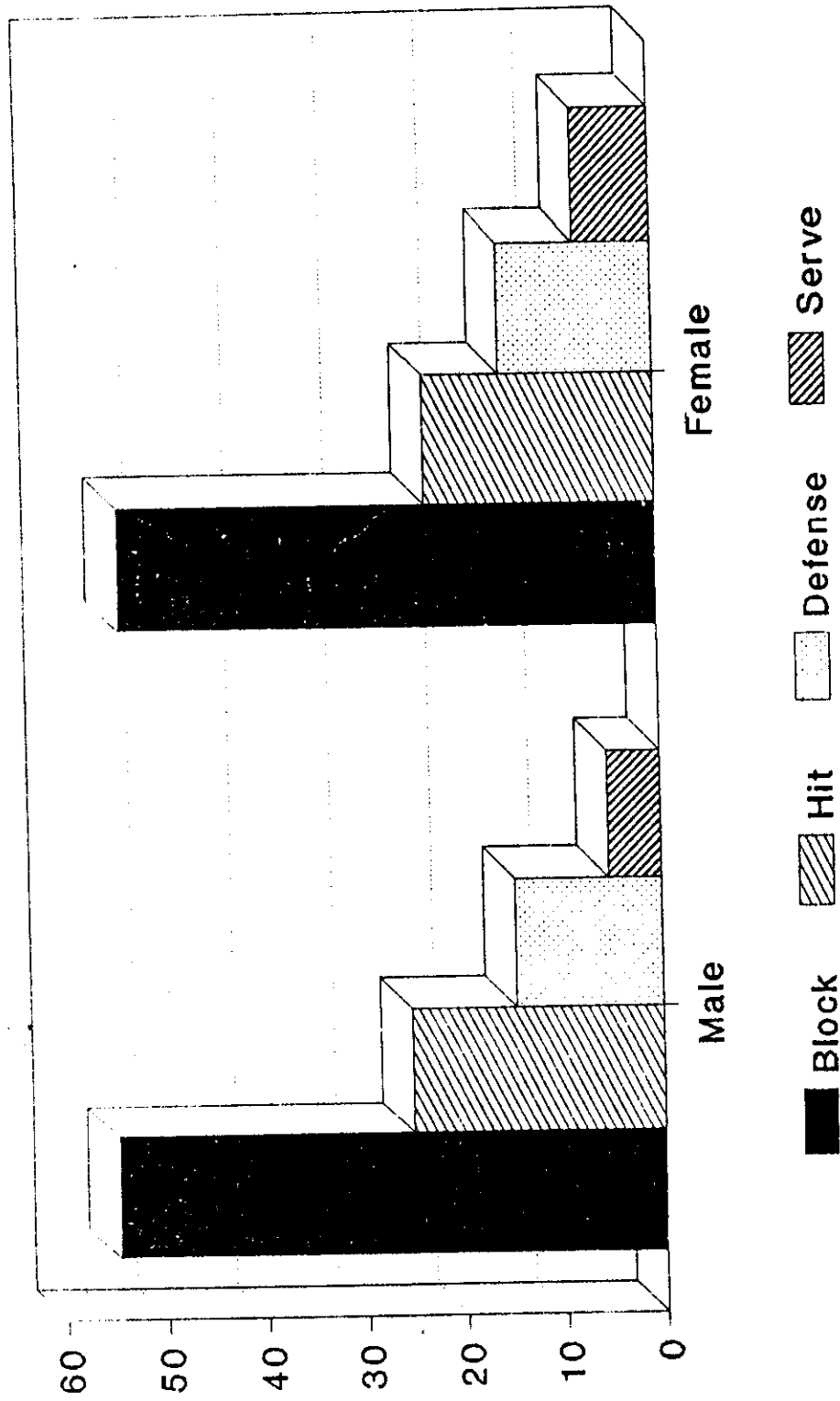


Fig.(4):Maneuvers at the time of injury among the studied EVBPs according to sex

Table (14): Type of injury among the studied EVBPs according to anatomical site of injury.

Site Type	Ankle		Knee		Hand wrist		Back		Shoulder		Thigh		Abd. ms.		Foot		Elbow		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Strain	4	16.67	4	21.05	8	50.00	13	100.0	0	0	7	87.50	0	0	0	0	0	0	36	37.11
Sprain	20	83.33	2	10.53	4	25.00	0	0	0	0	0	0	1	100.00	1	25.00	0	0	28	28.87
Inflam.	0	0	11	57.89	0	0	0	0	9	90.00	0	0	0	0	2	50.00	2	100.00	24	24.74
Overuse																				
Contusion	0	0	1	5.26	2	12.50	0	0	0	0	1	12.50	0	0	0	0	0	0	4	4.12
Fracture	0	0	0	0	1	6.25	0	0	0	0	0	0	0	0	1	25.00	0	0	2	2.06
Dislocation	0	0	1	5.26	1	6.25	0	0	1	10.00	0	0	0	0	0	0	0	0	3	3.09
Total	24	24.74	19	19.59	16	16.49	13	13.40	10	10.31	8	8.25	1	1.03	4	4.12	2	2.06	97	100.00

Table (15): Type of injury among the studied EVBPs according to positions.

Position Type of injury	1		2		3		4		5		6		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Strain	1	16.67	2	16.67	13	35.14	6	30.00	2	66.67	1	16.67	25	29.76
Sprain	2	33.33	4	33.33	13	35.14	8	40.00	0	0	1	16.67	28	33.33
Inflam														
Overuse	3	56.00	6	50.00	7	18.92	5	25.00	0	0	1	16.67	22	26.19
Contusion	0	0	0	0	0	0	1	5.00	1	33.33	2	33.33	4	4.76
Fracture	0	0	0	0	2	5.41	0	0	0	0	0	0	2	2.38
Dislocation	0	0	0	0	2	5.41	0	0	0	0	1	16.67	3	3.57
Total	6	7.14	12	14.29	37	44.05	20	23.81	3	3.57	6	7.14	84	100

Table (16): Type of injury among the studied EVBPs according to maneuvers.

Maneuver Type of injury	Block		Hit		Defense		Serve		Total	
	No	%	No	%	No	%	No	%	No	%
Strain	17	35.42	5	22.73	6	46.15	0	0	28	31.82
Sprain	19	39.58	6	27.27	1	7.69	2	40.00	28	31.82
Inflam., overuse	9	18.75	9	40.91	2	15.38	3	60.00	23	26.14
Contusion	1	2.08	0	0	3	23.08	0	0	4	4.55
Fracture	1	2.08	1	4.55	0	0	0	0	2	2.27
Dislocation	1	2.08	1	4.55	1	7.69	0	0	3	3.41
Total	48	54.55	22	25.00	13	14.77	5	5.68	88	100.00

Table (18) : Anatomical site of injury among the studied EVBPs according to maneuvers.

Anatomical site	Block		Hit		Defense		Serve		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Ankle	16	33.33	5	22.73	2	15.38	0	0	23	26.14
Knee	9	18.75	3	13.64	5	38.46	1	20.0	18	20.45
Hand, wrist	9	18.75	2	9.09	3	23.08	0	0	14	15.91
Back	8	16.67	2	9.09	1	7.69	0	0	11	12.50
Shoulder	1	2.08	7	31.82	0	0	1	20.0	9	10.23
Thigh	3	6.25	1	4.55	2	15.38	0	0	6	6.82
Foot	1	2.08	2	9.09	0	0	1	20.0	4	4.55
Elbow	1	2.08	0	0	0	0	1	20.0	2	2.27
Abd.ms	0	0	0	0	0	0	1	20.0	1	1.14
Total	48	54.55	22	25.00	13	14.77	5	5.68	88	100.0

Table (17) : Anatomical site of injury among the studied EVBPs according to positions.

Position Site of injury	1		2		3		4		5		6		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Ankle	0	0	4	33.33	10	27.03	7	35.00	0	0	1	16.67	22	26.19
Knee	1	16.67	4	33.33	6	16.22	2	10.0	2	66.67	2	33.33	17	20.24
Hand, wrist	0	0	1	8.33	7	18.92	3	15.0	1	33.33	2	33.33	14	16.67
Back	1	16.67	1	8.33	4	10.81	4	20.0	0	0	0	0	10	11.90
Shoulder	1	16.67	2	16.67	4	10.81	2	10.0	0	0	0	0	9	10.71
Thigh	0	0	0	0	3	8.11	1	5.0	0	0	1	16.67	5	5.95
Abd. ms.	1	16.67	0	0	0	0	0	0	0	0	0	0	1	1.19
Foot	1	16.67	0	0	2	5.41	1	5.0	0	0	0	0	4	4.76
Elbow	1	16.67	0	0	1	2.70	0	0	0	0	0	0	2	2.38
Total	6	7.14	12	14.29	37	44.05	20	23.81	3	3.57	6	7.14	84	100.0

Table (19): Maneuver at the time of injury among the studied EVBPs according to positions.

Position	1		2		3		4		5		6		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Maneuvers														
Block	0	0	8	66.67	24	64.86	15	75.0	0	0	0	0	47	55.95
Hit	0	0	4	33.33	13	35.14	5	75.0	0	0	0	0	22	26.19
Defense	1	16.67	0	0	0	0	0	0	3	100.0	6	100.0	10	11.90
Serve	5	83.33	0	0	0	0	0	0	0	0	0	0	5	5.95
Total	6	7.14	12	14.29	37	44.05	20	23.81	3	3.57	6	7.14	84	100.0