

CHAPTER

THREE : OBSERVATIONS OF VARIOUS AGE GROUPS OF WORKERS

A. PHYSICAL CHARACTERISTICS OF THE WORKERS

B. CARDIOVASCULAR RESPONSES OF THE WORKERS

1. AGE OF THE FACTORY WORKERS

2. BODY HEIGHT

3. BODY WEIGHT

4. HEART RATE

5. PEAK EXPIRATORY FLOW RATE

6. BLOOD PRESSURE

7. STEP-TEST.

OBSERVATIONS OF VARIOUS AGE GROUPS OF WORKERS:

As discussed in previous chapter, all the tests were demonstrated repeatedly to the workers prior to the physical examinations. All the tests carried out were simple and easy. These tests were carried out with handy equipments and without errors. The various equipments used to perform various tests are as follows:

Test	Equipments used
1) Body Weight	-- Medical Weight Box.
2) Heart Rate	-- Stethoscope, stop-watch.
3) PEFR	-- Wright's Peak-Flow Meter
4) B.P.	-- Sphygmomanometer, Stethoscope.
5) O.T.	-- Clinical Thermometer.
6) Step Test	-- Wooden stool, stop watch, metronome.

There are large number of physical parameters used to determine the physical fitness but few were chosen for present investigation. The chosen paramters are well-known, simple and easy to determine. One could easily understood the physical fitness of the workers by overlooking the observations roughly.

All the examinations were carried out in a definite time-span, that was given to the factory management. As the examinations were carried out in the resting periods of the workers, the time consumption from workers daily workshifts was avoided. All the observations were made carefully and also recorded neatly. The observation tables were neatly and simply tabulated to avoid further complications.

A) PHYSICAL CHARACTERISTICS OF THE WORKERS:

Physical characteristics of the workers include body height (Cms.) and body wt. (Kgs.). The workers were categorised as their respective age groups into eight groups viz; 21-25, 26-30, 31-35, 36-40, 41-45, 46-50, 51-55, 56-60. The number of the workers studied from each group is given in Table 1. The body heights of the workers were measured without shoes, whereas, body weight of the workers were recorded prior to lunch. Physical characteristics of the workers are recorded from Table 2 to Table 9.

These tables include:

Table 2: Physical characteristics of the workers (Age Group: 21-25)

Table 3: Physical characteristics of the workers (Age Group: 26-30)

Table 4: Physical characteristics of the workers (Age Group: 31-35)

Table 5: Physical characteristics of the workers (Age Group: 36-40)

Table 6: Physical characteristics of the workers (Age Group: 41-45)

Table 7: Physical characteristics of the workers (Age Group: 46-50)

Table 8: Physical characteristics of the workers (Age Group: 51-55)

Table 9: Physical characteristics of the workers (Age Group: 56-60)

Table 2: PHYSICAL CHARACTERISTICS OF THE WORKERS
(AGE GROUP: 21-25)

Sr. No.	Name of the Sub.	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	TSN	95261	20.16	160	59
2)	PCN	95273	20.25	167	54
3)	KBC	95259	21.00	157	55
4)	BBK	95264	21.16	163	56.5
5)	BTW	BTW	21.16	154	50
6)	GSK	95270	21.25	175	67.5
7)	SSN	95263	21.33	165	52.5
8)	BVS	95271	21.50	163	58.5
9)	DHJ	95258	21.50	172	60.5
10)	SMC	95262	22.25	162	58.5
11)	RSP	6454	22.08	165	54
12)	MDP	6420	22.08	168	57
13)	GMD	GMD	22.50	165	58.5
14)	SYJ	6458	23.00	157	54
15)	AKY	95274	23.00	168	58.5
16)	ALB	6399	23.50	170	60
17)	AKY	5896	23.50	170	56.5
18)	NJL	95257	24.00	152	52.5
19)	ASC	154	24.50	165	57
20)	SBG	158	22.08	155	52.5
21)	RBD	156	21.58	165	55
22)	PYK	160	22.50	162	54.5
23)	BMS	162	21.50	165	56
24)	KSS	165	24.00	159	51
25)	STK	167	22.50	170	64.5

Table 3: PHYSICAL CHARACTERISTICS OF THE WORKERS**(AGE GROUP: 26-30)**

Sr. No.	Name of the Sub.	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	DB.K	60 _H	28.08	165	54.5
2)	AVM	61 _H	29.75	161	51.5
3)	BBM	64 _H	27.50	157	50
4)	MRS	69 _H	28.50	170	67
5)	LSP	73 _H	30.66	164	56
6)	NDI	76 _H	30.50	177	54.5
7)	SGP	78 _H	27.50	165	51
8)	ACP	84 _H	29.50	170	57.5
9)	TSS	85 _H	28.66	154	59.5
10)	AGP	94 _H	28.55	161	57
11)	TYS	95 _H	30.50	163	57.5
12)	KAE	96 _H	29.50	169	59
13)	KDM	98 _H	28.41	161	54.5
14)	DRS	146 _H	29.58	170	62
15)	ADB	150 _H	29.50	165	54
16)	UBP	46 _S	30.25	160	56
17)	DSY	72 _S	29.66	169	57.5
18)	SRK	77 _S	27.50	165	58.5
19)	VSK	79 _S	27.91	165	58.5
20)	YDM	100 _S	30.75	167	59.5
21)	MAM	101 _S	30.50	165	57
22)	SST	102 _S	28.75	171	58
23)	SDG	107 _S	30.50	168	53.5
24)	TKW	109 _S	29.50	169	59
25)	MNK	110 _S	27.50	166	55

Table 4: PHYSICAL CHARACTERISTICS OF THE WORKERS**(AGE GROUP: 31-35)**

Sr. No.	Name of the Sub.	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	CSS	6161	33.25	165	70
2)	VGK	6191	35	165	77
3)	MST	6212	34.50	163.5	70
4)	VRS	6213	32.58	170	62.5
5)	VDS	6214	34.50	168.5	65.5
6)	MNK	6253	31.91	171	61
7)	RDV	6237	31.58	166.5	58
8)	SHM	6249	32	160	63.5
9)	JPS	6255	33.91	156.5	65
10)	SSO	6267	34.50	161	57.5
11)	ARN	6288	32.5	163.5	43.5
12)	AGJ	6293	32.25	165	56.5
13)	DJM	6302	31.75	161	59.5
14)	DRL	6304	33.75	156.5	43.5
15)	MGN	6315	30.50	165	66
16)	SHG	6326	30.50	165.5	61.5
17)	GVM	6330	32.50	162	65
18)	SRT	6333	32.58	177.5	66.5
19)	ABS	6334	30.50	155	58.5
20)	KBK	6338	34.50	158.5	51.5
21)	VSA	6341	31.66	170	69
22)	SBP	6345	34.50	170	56.5
23)	JVP	6314	34.50	172.5	64
24)	AAA	6354	33.50	168	52.5
25)	APJ	6358	34.50	156	56

Table 5: PHYSICAL CHARACTERISTICS OF THE WORKERS**(AGE GROUP: 36-40)**

Sr. No.	Name of the Sub.	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	JYY	4002	39.50	161	55.5
2)	JSS	4202	38.50	163	58.5
3)	ARC	4074	39.91	156	64.5
4)	SRK	4139	39.16	161	67
5)	RJS	4239	39.50	162	65
6)	SBT	4441	39.50	165	60
7)	PVG	4261	38.75	158	58
8)	SST	4505	39.50	170	58
9)	BBK	4297	39.41	158	61
10)	GGP	6004	39.50	163	58.5
11)	KBP	6010	38.66	168	60.5
12)	SBS	6013	36.50	165	61
13)	SMS	6040	39.41	162	63
14)	RDK	6044	39.41	158	59.5
15)	BDM	6057	38.50	162	63
16)	LDY	6058	39.41	160	55.5
17)	SKP	6059	37.50	162	52
18)	TBY	6007	39.50	165	61.5
19)	ABK	6067	38.50	162	63
20)	SKM	6109	35.41	162	47
21)	DVM	6135	35.50	158	61.5
22)	MRA	6146	37.25	161	60.5
23)	BVS	6149	36.50	165	58
24)	PJP	6150	37.50	169	67
25)	VRP	6183	36.50	161	57.5

Table 6: PHYSICAL CHARACTERISTICS OF THE WORKERS**(AGE GROUP: 41-45)**

Sr. No.	Name of the Sub.	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	AHK	1977	42.75	169	61.5
2)	SYC	3600	41.66	158	56
3)	SSS	3738	41.66	161.5	57.5
4)	VGT	3614	42	160	55.5
5)	DSG	3900	44.75	165.5	63
6)	RKP	3932	41.41	166	65.5
7)	CPS	4242	41.41	167.5	65.5
8)	DYK	4426	42.50	173	66.5
9)	RTG	4442	41.41	165	63.5
10)	SKV	4444	41.41	175	79
11)	MNJ	4262	41.50	179	56.5
12)	VRN	4482	41.75	174.5	68.5
13)	STK	4511	41.41	161	57
14)	VKK	4519	43.50	167.5	61.5
15)	SBI	4531	44.91	162	66
16)	NIK	4524	41.75	167.5	65
17)	SRA	4563	41.33	161	65.5
18)	BRK	4675	43.91	163	60
19)	DTJ	4676	41.91	158	62.5
20)	ARG	6036	41	156	56
21)	VKN	6041	41.5	163.5	54.5
22)	RDD	6085	42.83	169	63.5
23)	LKM	6094	41.50	168.5	74
24)	BDP	6099	41.50	172	65.5
25)	SRD	6100	41.50	168	66.5

Table 7: PHYSICAL CHARACTERISTICS OF THE WORKERS**(AGE GROUP: 46-50)**

Sr. No.	Name of the Sub	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	RSG	2065	46.66	168	71
2)	AIS	2258	46.75	169.5	70
3)	BBM	3672	46.75	165	63
4)	RVB	3867	46.66	171.5	70.5
5)	VVT	3944	46.41	160	63
6)	GDL	4127	47.75	163.5	65
7)	SRK	4193	46.66	160.5	56.5
8)	RCT	4280	48.50	161	66
9)	JVV	4414	48.91	162	56
10)	KVK	4636	46.50	168.5	70
11)	MCS	6048	46.25	165.5	68.5
12)	DGR	6025	46.41	160	58.5
13)	DSP	6070	49.25	161	61
14)	KJS	6071	49.83	160	65
15)	MKM	6076	48.41	161	58.5
16)	PDZ	6129	46.33	160.5	50.5
17)	LNS	6157	46.66	160	58.5
18)	AAK	6205	46.16	158.5	51
19)	RBP	6332	47.91	167	69
20)	SBJ	6234	49.75	157	60
21)	BPT	55H	47.50	166	53.5
22)	SPS	59H	47.33	162	53
23)	DBM	63H	49.91	163	61
24)	MLD	68H	46.66	162.5	59
25)	AMA	70H	46.75	163	55

Table 8: PHYSICAL CHARACTERISTICS OF THE WORKERS
(AGE GROUP: 51-55)

Sr. No.	Name of the Sub	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	JBN	40 _s	51.66	159	57.5
2)	SRS	58 _s	51.75	160	58.5
3)	CPP	59 _s	53.91	167.5	65.5
4)	DNJ	70 _s	51.83	155	55
5)	PBW	115 _s	51.58	166	62.5

Table 9: PHYSICAL CHARACTERISTICS OF THE WORKERS**(AGE GROUP: 56-60)**

Sr. No.	Name of the Sub.	Ticket No.	Age (Yrs.)	Body Height (Cms.)	Body Weight (Kgs.)
1)	VKG	2711 _k	56	162	58
2)	SKZ	6053 _k	57.58	164	62.5
3)	SJN	6188 _k	56.33	160	57
4)	TSM	6226 _k	56.16	158.8	60.5
5)	AKJ	44 _s	56.33	154	56

B) CARDIOVASCULAR RESPONSES OF THE WORKERS:

The cardiovascular examinations include heart rate (Beats/min.), PEFR (Lits./min.), B.P. (mm.H_g) both systolic and diastolic, oral Temperature (°F), and step Test. All the examinations were carried out in factory environment in a well-ventilated examination room. The crowding of the workers during examinations were avoided. All the examinations were done in resting periods of the workers. Details of each test are given in chapter second. The oral temperature readings were recorded to avoid the fever conditions of the workers. These observations are recorded from Table 10 to 17. These tables include -

Table 10: Cardiovascular responses of the workers (Age Group: 21-25)

Table 11: Cardiovascular responses of the workers (Age Group: 26-30)

Table 12: Cardiovascular responses of the workers (Age Group: 31-35)

Table 13: Cardiovascular responses of the workers (Age Group: 36-40)

Table 14: Cardiovascular responses of the workers (Age Group: 41-45)

Table 15: Cardiovascular responses of the workers (Age Group: 46-50)

Table 16: Cardiovascular responses of the workers (Age Group: 51-55)

Table 17: Cardiovascular responses of the workers (Age Group: 56-60)

TABLE 10: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 21-25)

Sr. No.	Ticket No.	Cardiovascular Responses							Step Test	
		HR Beats/min.	PEFR (Lits/min.)	Blood S	Pressure (mm Hg)	PP	Oral Temp. (°F)	Durm of stepping (Sec.)	1-1½ min. RPC	Score
1)	95261	78	510	122	76	46	97.2	240	56	62.33
2)	95273	72	495	113	74	44	97.2	300	76	57.14
3)	95259	76	560	120	74	46	97.4	300	64	68.18
4)	95264	72	535	120	70	40	98.2	300	63	69.26
5)	BTW	72	515	122	30	42	97.4	300	72	60.60
6)	95270	74	460	130	78	52	97.2	140	62	56.30
7)	95263	78	480	120	74	46	98.4	240	60	58.18
8)	95271	78	485	120	30	40	97.6	300	70	62.82
9)	95258	76	510	122	30	42	97.4	300	70	62.82
10)	95262	72	475	126	78	48	97.8	240	60	58.18
11)	6454	76	500	118	30	38	98	300	78	55.94
12)	6420	75	495	120	53	52	97.6	300	83	52.57
13)	GMD	73	540	120	76	44	97.4	300	60	72.72
14)	6458	72	480	120	78	42	98.2	240	66	52.89
15)	95274	70	490	122	30	42	97.6	240	60	58.18
16)	6399	72	465	126	30	46	97.8	240	62	56.30
17)	5896	74	485	116	76	40	97.4	300	74	58.96
18)	95257	76	530	120	30	40	97.6	300	70	62.82
19)	154	70	560	126	30	46	97.4	300	58	75.23
20)	158	74	490	122	76	46	97.8	300	82	53.21
21)	156	70	530	120	82	38	97.6	300	69	63.24
22)	160	72	485	120	30	40	97.6	240	69	50.59
23)	162	76	500	126	78	48	98.0	180	49	53.43
24)	165	74	535	124	78	46	97.8	300	70	62.82
25)	167	72	520	118	30	38	98.2	300	68	64.17
Total		1844	12620	3038	1946	1092	2441.8			1508.88

TABLE 11: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 26-30)

Sr. No.	Ticket No.	Cardiovascular Responses					Step Test			Score
		HR Beats/ min.	PBFR (Lits/ min.)	Blood Pressure S D	(mm Hg) PP	Ord Temp. (F)	Durm of stepping (Sec.)	1-1½ min. RFC		
1)	60H	80	560	128	86	42	95.4	300	58	75.23
2)	61H	80	520	127	84	43	96.2	300	62	70.38
3)	64H	78	535	128	88	40	96.4	300	60	72.72
4)	69H	76	535	122	84	48	95.4	300	64	68.18
5)	72H	80	480	130	82	48	95.8	240	58	60.18
6)	76H	80	490	128	80	48	97.2	300	64	68.18
7)	78H	76	460	132	82	50	96.8	240	71	49.16
8)	84H	78	480	118	84	34	97	300	67	65.12
9)	854	78	495	130	90	40	95.8	300	62	70.38
10)	944	80	540	126	86	40	96.2	300	72	60.60
11)	95H	82	460	124	88	36	97.4	240	68	51.33
12)	96H	74	465	128	88	40	96.4	240	66	52.89
13)	98H	78	475	128	84	44	96.6	300	64	68.18
14)	146H	78	485	130	92	38	97.4	300	74	58.96
15)	150H	76	490	130	90	40	96.8	300	76	57.14
16)	46S	82	540	124	86	38	95.8	300	66	66.11
17)	72S	78	475	126	88	38	96.6	240	68	51.33
18)	77S	78	525	128	84	44	98	300	70	62.82
19)	79S	76	540	122	84	38	97.2	300	70	62.82
20)	100S	80	520	124	82	42	96.8	300	64	68.18
21)	101S	78	480	126	86	40	97	300	66	66.11
22)	102S	82	530	128	82	46	95.8	300	68	64.17
23)	107S	76	545	122	88	34	96.4	300	62	70.38
24)	109S	76	575	128	94	34	96.4	300	60	72.72
25)	110S	74	580	126	88	38	96.6	300	58	75.23
Total		1954	12780	3173	2150	1023	2414.4			1608.5

TABLE 12: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 31-35)

Sr. Ticket No. No.	Cardiovascular Responses						Step Test			
	HR Beats/min.	PEFR (Lits/min.)	Blood S	Pressure D	(mm Hg) PP	Oral Temp. (F)	Durm of stepping (Sec.)	1-1½ min. RPC	Score	
1)	6161	78	545	124	74	50	97.6	300	58	75.23
2)	6191	74	430	134	84	50	97.4	170	64	38.63
3)	6212	76	525	130	84	46	97.2	300	63	69.26
4)	6213	76	480	136	88	48	96.8	300	78	55.94
5)	6214	74	530	130	82	48	97.2	300	64	68.18
6)	6253	70	500	132	80	52	97	180	46	56.91
7)	6237	72	495	122	76	46	97.2	300	72	60.60
8)	6249	78	435	124	80	44	95.4	180	60	43.63
9)	6255	76	545	122	80	42	97.4	300	64	68.18
10)	6267	78	540	126	80	46	95.6	300	68	65.12
11)	6288	74	465	128	82	46	96.6	300	82	53.21
12)	6293	76	580	126	76	50	96.8	300	56	77.92
13)	6302	78	430	118	70	48	95.3	180	60	43.63
14)	6304	78	490	128	82	46	97.2	300	82	53.21
15)	6315	72	500	126	80	46	97.2	300	70	62.82
16)	6326	78	510	134	82	52	96.8	300	60	66.11
17)	6330	74	495	128	82	46	96.4	300	75	58.18
18)	6333	76	520	130	86	44	96.4	300	67	65.12
19)	6334	76	500	132	78	54	96.8	300	80	54.54
20)	6338	73	525	128	78	50	95.8	300	70	62.82
21)	6341	76	545	126	82	44	96.2	300	63	96.26
22)	6345	72	560	130	86	44	97	300	59	73.95
23)	6314	74	555	126	80	46	96.8	300	61	71.53
24)	6354	72	515	126	82	44	97.2	300	78	55.78
25)	6358	74	540	128	82	46	95.2	300	71	61.45
Total	1660	12755	3194	2016	1178	2416.5				1531.21

TABLE 13: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 36-43)

Sr. No.	Ticket No.	Cardiovascular Responses										Step Test	
		HR Beats/min.	PEFR (Lits/min.)	Blood S	Pressure D	(mm Hg) PP	Oral Temp. (°F)	Dist. of stepping (Sec.)	1-1½ min. RPC	Score			
1)	4002	76	515	132	82	50	96.2	240	58	60.18			
2)	4202	78	445	136	84	52	96.4	180	60	43.63			
3)	4074	72	460	124	80	44	96.2	180	65	40.27			
4)	4139	76	510	130	78	52	97	300	70	62.82			
5)	4239	76	535	132	76	56	96.4	300	65	67.13			
6)	4441	78	545	130	78	52	96.2	300	60	72.72			
7)	4261	76	500	126	80	46	97	300	72	60.60			
8)	4505	76	510	122	76	46	95.6	300	73	59.77			
9)	4297	78	500	119	80	48	96.2	240	60	58.18			
10)	6004	76	540	128	84	44	97	300	62	70.38			
11)	6010	78	505	130	86	44	98.2	300	68	64.17			
12)	6013	80	335	130	78	52	96	300	62	70.38			
13)	6040	74	530	126	76	50	97.2	300	66	66.11			
14)	6044	78	540	130	34	46	96.4	300	65	67.13			
15)	6057	72	560	126	78	48	95.8	300	62	70.38			
16)	6058	74	495	128	80	48	97	300	66	66.11			
17)	6059	78	490	124	80	44	98	240	58	60.18			
18)	6007	80	500	130	82	48	96.6	300	70	62.82			
19)	6067	76	470	128	80	48	96.4	180	65	40.27			
20)	6109	78	500	118	75	43	95.2	240	68	51.33			
21)	6135	74	535	128	78	50	97.2	300	62	70.38			
22)	6146	76	485	122	80	42	95.6	180	50	52.36			
23)	6149	78	495	128	80	48	96.2	240	60	58.18			
24)	6150	74	500	130	78	52	96.4	240	62	56.30			
25)	6183	78	510	128	80	48	97.2	300	68	64.17			
Total		1910	12710	3194	1993	1201	2413.6			1515.95			

TABLE 14: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 41-45)

Sr. No.	Ticket No.	Cardiovascular Responses							Step Test	
		HR Beats/min.	PEFR (Lits/min.)	Blood Pressure (mm Hg) S D	Oral Tapp. (F) PP	Oral Tapp. (F)	Durn of stepping (Sec.)	1-1½ min. RPC	Score	
1)	1977	78	520	130	86	44	97.2	300	72	60.60
2)	3600	80	480	128	82	46	96.6	240	68	51.33
3)	3788	78	515	130	88	42	97.4	240	58	60.18
4)	3614	76	500	136	92	44	97	300	80	54.54
5)	3900	82	545	128	86	42	95.8	300	62	70.38
6)	3932	80	515	130	84	46	97.2	300	66	66.11
7)	4242	76	520	128	88	40	98.2	240	55	63.47
8)	4426	84	530	130	88	42	97.6	300	70	62.82
9)	4442	80	500	128	86	42	97.6	240	55	63.47
10)	4444	80	540	130	86	44	96.8	300	61	71.53
11)	4262	76	480	126	82	44	95.8	300	84	51.94
12)	4482	78	465	132	86	46	97.2	300	86	50.73
13)	4511	86	490	130	88	42	96.6	300	80	54.54
14)	4519	78	495	130	84	46	97.6	300	72	60.60
15)	4531	78	520	126	82	44	96.8	240	53	65.86
16)	4524	78	535	126	80	46	96.4	300	60	62.72
17)	4563	80	440	136	88	48	97	300	86	50.73
18)	4675	78	510	134	86	48	98	300	68	64.17
19)	4676	82	460	132	86	46	96.8	200	65	44.75
20)	6036	78	520	126	82	44	97	300	67	65.12
21)	6041	78	510	128	82	46	96.8	300	75	58.18
22)	6085	78	515	128	82	46	97.2	300	68	64.17
23)	6094	80	490	128	84	44	97.2	240	60	58.18
24)	6099	76	530	128	86	42	96.8	300	73	59.77
25)	6100	78	445	130	88	42	95.8	240	65	53.70
Total		1976	12570	3238	2132	1106	2424.4			1499.59

TABLE 15: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 46-50)

Sr. No.	Ticket No.	Cardiovascular Responses						Step Test		Score
		HR Beats/min.	PEFR (Lits/min.)	Blood S D Pressure	(mm Hg) P P	Oral Temp. (F)	Duration of stepping (Sec.)	1-1½ min. RPC		
1)	2065	80	430	134	90	44	97.4	180	60	43.63
2)	2258	82	435	136	94	42	96	180	53	49.39
3)	3672	76	515	130	86	44	97.2	300	72	60.60
4)	3867	78	540	128	82	46	97.4	300	64	68.18
5)	3944	80	420	132	88	44	97	180	56	46.75
6)	4127	82	500	134	92	42	96.8	300	70	61.45
7)	4193	80	440	132	84	48	95.4	240	60	58.18
8)	4280	82	460	134	90	44	96.8	300	84	51.94
9)	4414	80	430	138	90	48	97.1	180	60	43.63
10)	4636	76	520	132	90	42	96.4	300	65	67.13
11)	6048	82	425	130	82	48	95.8	180	52	50.34
12)	6025	80	515	128	80	48	96.4	300	74	58.96
13)	6070	78	535	132	84	48	97.2	300	66	66.11
14)	6071	84	500	136	92	44	96.8	300	78	55.94
15)	6076	78	430	130	84	46	96.2	180	56	46.75
16)	6129	80	470	130	82	48	95.8	240	65	53.70
17)	6157	78	430	132	86	46	96.4	180	58	45.14
18)	6205	82	520	128	84	44	96.2	300	70	62.82
19)	6332	80	515	130	88	42	97.2	300	74	58.96
20)	6234	78	470	134	90	44	97.6	240	67	52.10
21)	55 ^H	80	500	126	82	44	96.2	300	72	60.60
22)	59 ^H	80	450	126	84	42	97.2	300	90	54.54
23)	63 ^H	78	510	128	84	44	96.8	300	65	67.13
24)	68 ^H	78	520	130	86	44	97.4	300	71	61.45
25)	70 ^H	82	530	126	82	44	96.8	300	68	64.17
Total		1994	12010	3276	2156	1120	2417.5			1409.59

TABLE 16: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 51-55)

Sr. No.	Ticket No.	Cardiovascular Responses							Step Test	
		HR Beats/min.	PEFR (Lits/min.)	Blood S	D	Pressure (mm Hg) PP	Oral Temp. (°F)	Durn of stepping (Sec.)		1-1½ min. RPC
1)	40 _S	82	430	135	92	43	96	300	84	51.94
2)	58 _S	80	450	132	90	42	96.2	300	78	55.94
3)	59 _S	84	460	134	92	42	97.2	240	64	54.54
4)	70 _S	82	490	130	86	44	96.8	300	72	60.60
5)	115 _S	82	475	132	88	44	96.4	240	66	52.89
Total		410	2305	663	448	215	482.6			275.91

TABLE 17: CARDIOVASCULAR RESPONSES OF THE WORKERS (AGE GROUP: 56-60)

Sr. No.	Ticket No.	Cardiovascular Responses							Step Test	
		HR Beats/min.	PEFR (Lits/min.)	Blood S D Pressure (mm Hg)	PP	Oral Temp. (°F)	Drum of stepping (Sec.)	1-1½ min. RPC	Score	
1)	2711 _k	84	455	132	90	42	97.0	300	78	55.94
2)	6053 _k	84	470	136	96	40	96.4	240	64	54.54
3)	6188 _k	88	440	136	92	44	96.6	240	70	49.87
4)	6226 _k	86	460	144	98	46	97.2	300	80	54.54
5)	44 _c	80	435	138	96	42	96.8	240	68	51.33
Total		422	2260	686	472	214	484			266.22

The workers were categorised with their respective age groups. The total number of workers studied is 160. It is given in the table 1. Tables from 2 to 17 includes various readings of the physical parameters of the workers.

1. AGE OF THE FACTORY WORKERS:

For the present study workers selected from eight age groups, viz; 21-25, 26-30 - - -, 56-60. Twenty-five workers from each group were examined from first six groups, whereas, five workers from each group were examined from last two groups. Age of all the workers is converted into complete years. Average age of the workers of first group i.e. 21-25 is 22.1552 years. On the other hand average age of the workers of last group i.e. 56-60 is 56.48 years. The average age of the workers of each group is given in table 18. The workers over 51 years were available in very less number therefore, only five workers were studied from last two groups. Thus, average age of the workers in Kirloskar Hermetics Pvt.Ltd., Karad, examined during the investigation is 40.1075 years.

2. BODY HEIGHT:

Body height of the workers is also measured. Although, it is not a necessary parameter to determine one's physical fitness; but it gives a clear idea about overweighing or underweighing condition in a worker. The body^{ht} shows negative correlation with age ($r = - 0.6692$). Thus, as ^{the} age increases the body height decreases. The average

Table 18: AVERAGE AGE OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	22.1552	± 1.1506633	0.2301326
26-30	29.1816	± 1.1157534	0.2231506
31-35	32.9488	± 1.4305515	0.2861103
36-40	38.3712	± 1.3771962	0.2754392
41-45	42.1104	± 1.078755	0.215751
46-50	47.4664	± 1.2370694	0.2474138
51-55	52.146	± 0.8859932	0.3962282
55-60	56.48	± 0.5635246	0.2520158

Table 19: AVERAGE BODY HEIGHT OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	163.76	± 5.8186482	1.1637296
26-30	165.72	± 4.8090193	0.9618038
31-35	164.52	± 5.6999269	1.1399854
36-40	162.28	± 3.494281	0.6988562
41-45	166.04	± 5.8057443	1.1611489
46-50	163.06	± 3.6751417	0.7350283
51-55	161.5	± 4.6260134	2.0688161
56-60	159.7	± 3.4	1.5205262

body height of the workers from each age group is given in table 19. The reduction in the average body height of the workers with age is clearly noted in table 19. The average body height of the workers examined during investigation is 163.25 Cms. From the age of 45 Yrs. the body height gets reduced, and thus, indicates it's negative correlation with age.

3. BODY WEIGHT:

Body weight is an important indicator to know one's physical fitness. Both weighing and overweighing conditions affect the physical fitness of an individual. Though the body weight is positively correlated with age, it is not highly correlated ($r = 0.4632$). Thus in the present study it was observed a slight increase in body weight upto age of 45 Yrs. but then it goes on gradually decreasing. (Fig. No.3). Average body weight of the workers studied is 59.66 Kgs. The averages of each age group are given in table 20. According to the physiologist the weight of the individual on the correct mark of fitness must be equal to his height in Cms. minus hundred.

$$\text{i.e. Weight in Kgs.} = \text{Height in Cms.} - 100$$

If this value is greater, it shows overweighing condition and if, it is lesser it shows underweighing condition and both show unfit physique.

In the present investigation if we compare body height and body weight of the workers it clearly shows that the

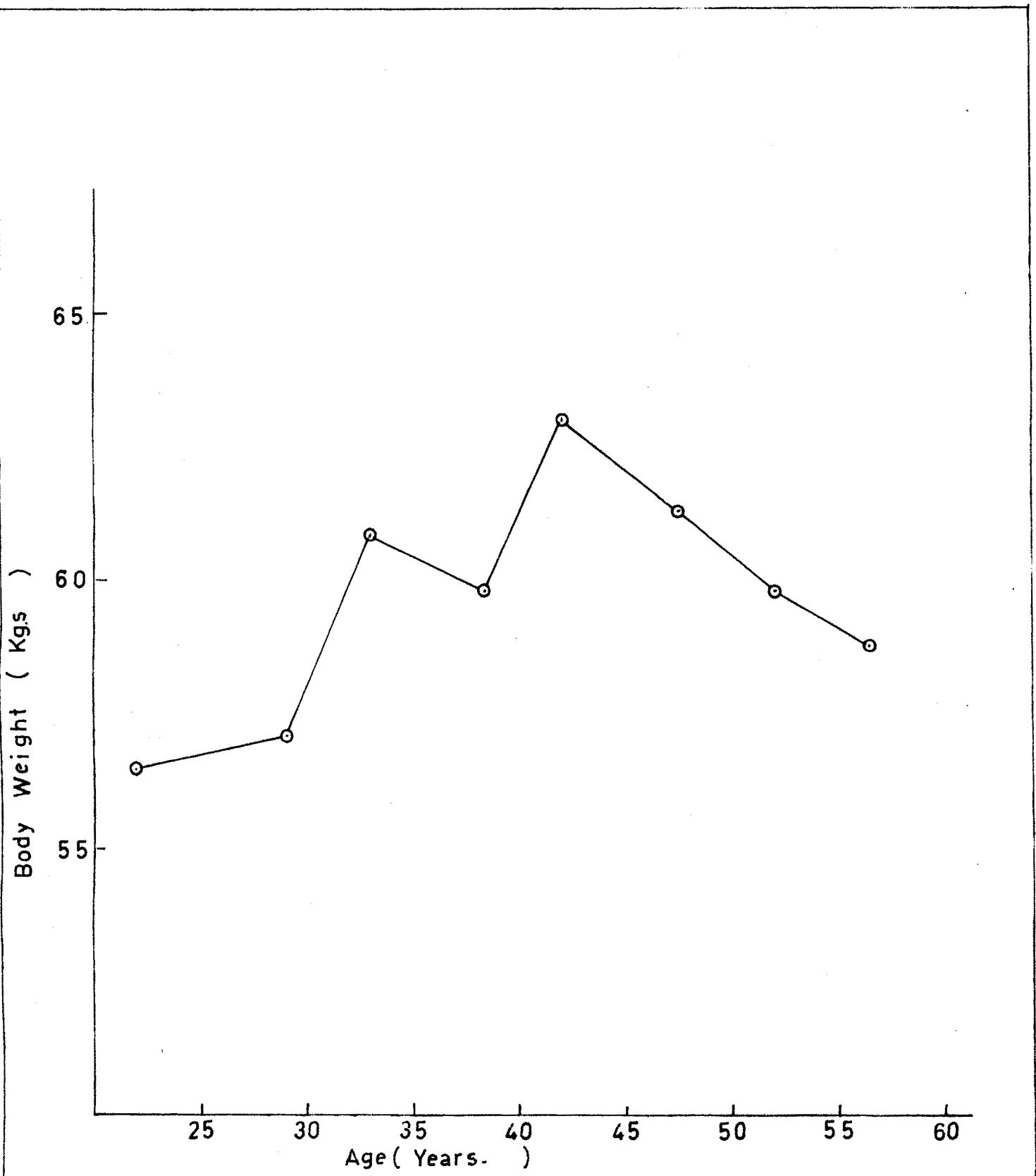


Fig.No.3 Body Weight as a function of age.

Table 20: AVERAGE BODY WEIGHT OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	56.54	± 3.9997917	0.7999583
26-30	57.12	± 3.5510562	0.7102112
31-35	60.8	± 7.8435217	1.5687043
36-40	59.86	± 4.4406268	0.8881253
41-45	63.04	± 5.841581	1.1683036
46-50	61.32	± 6.3588521	1.2717704
51-55	59.8	± 3.7363083	1.6709279
56-60	58.8	± 2.3790755	1.0639549

Table 21: AVERAGE HEART-RATE OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	73.76	± 2.4879711	0.4975942
26-30	78.16	± 2.3036203	0.460724
31-35	75.2	± 2.3804761	0.4760952
36-40	76.4	± 2.1602469	0.4320493
41-45	79.04	± 2.4576411	0.4915282
46-50	79.76	± 2.0264912	0.4052982
51-55	82	± 1.2649111	0.5656854
56-60	84.4	± 2.6532998	1.1865917

workers are underweighing. (Average body height 163.32 Cms., Average body weight 5.66 Kgs., But this can be observed on average body height and body weight. On the other hand ⁱⁿ the individual observations (Table 2 to 9) there are number of cases of overweighing.

4. HEART-RATE:

The resting heart rate is an important parameter to know the physical fitness of an individual. Lesser is the resting heart rate greater is the physical fitness. On the other hand higher the resting heart rate lower is the physical fitness. In the present study heart rate goes on increasing with age. The resting heart rate is highly correlated with age ($r = 0.8595$). The table 21 shows the average heart rate of the worker belonging to various age groups. The individual heart rates of the workers are given in table 10 to 17. As the resting heart-rate in the present study, increases with age the working capacity of the workers must be decreasing with age. Due to the lack of equipments and time, therefore working heart rates were not studied. The resting heart rate values are much indicative the strain on the workers. The graph (Fig.No. 4) clearly shows that ^{the} resting heart rate increases with age specifically from the age of 40 to 55 years. It remarkably increased upto 84 beats per minute. On the other hand the resting heart rate at the age of 21 years is only 73 beats/min.

5. PEAK EXPIRATORY FLOW RATE: (PEFR)

The lung power can be determined by knowing one's

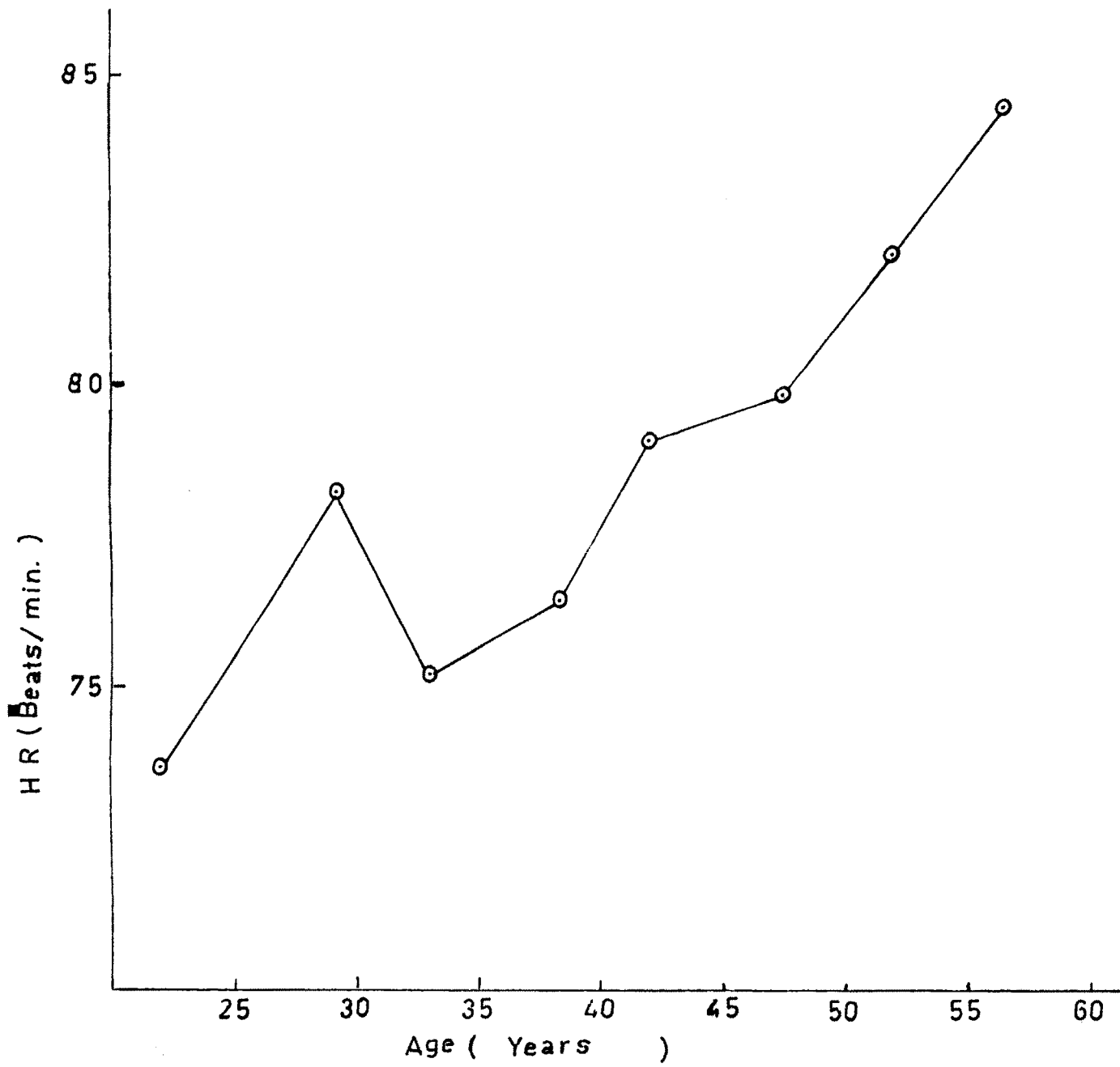


Fig.No 4 Resting heart rate as a function of age.

Table 22: AVERAGE PEFR OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	504.8	± 27.894145	5.578829
26-30	511.2	± 36.178953	7.2357907
31-35	510.2	± 39.986456	7.9972912
36-40	508.4	± 27.451472	5.4902945
41-45	502.8	± 28.434134	5.6868269
46-50	480.4	± 41.556187	8.3112374
51-55	461	± 20.59126	9.2086915
56-60	452	± 12.884099	5.7619441

Table 23: AVERAGE SYSTOLIC B.P. OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	121.52	± 3.2290349	0.6458069
26-30	126.92	± 3.2649655	0.6529931
31-35	127.67	± 4.1360206	0.8272041
36-40	127.76	± 3.7558843	0.7511768
41-45	129.52	± 2.7856777	0.5571355
46-50	131.04	± 3.2721043	0.6544208
51-55	132.6	± 1.7435596	0.7797435
56-60	137.2	± 3.9191836	1.7528122

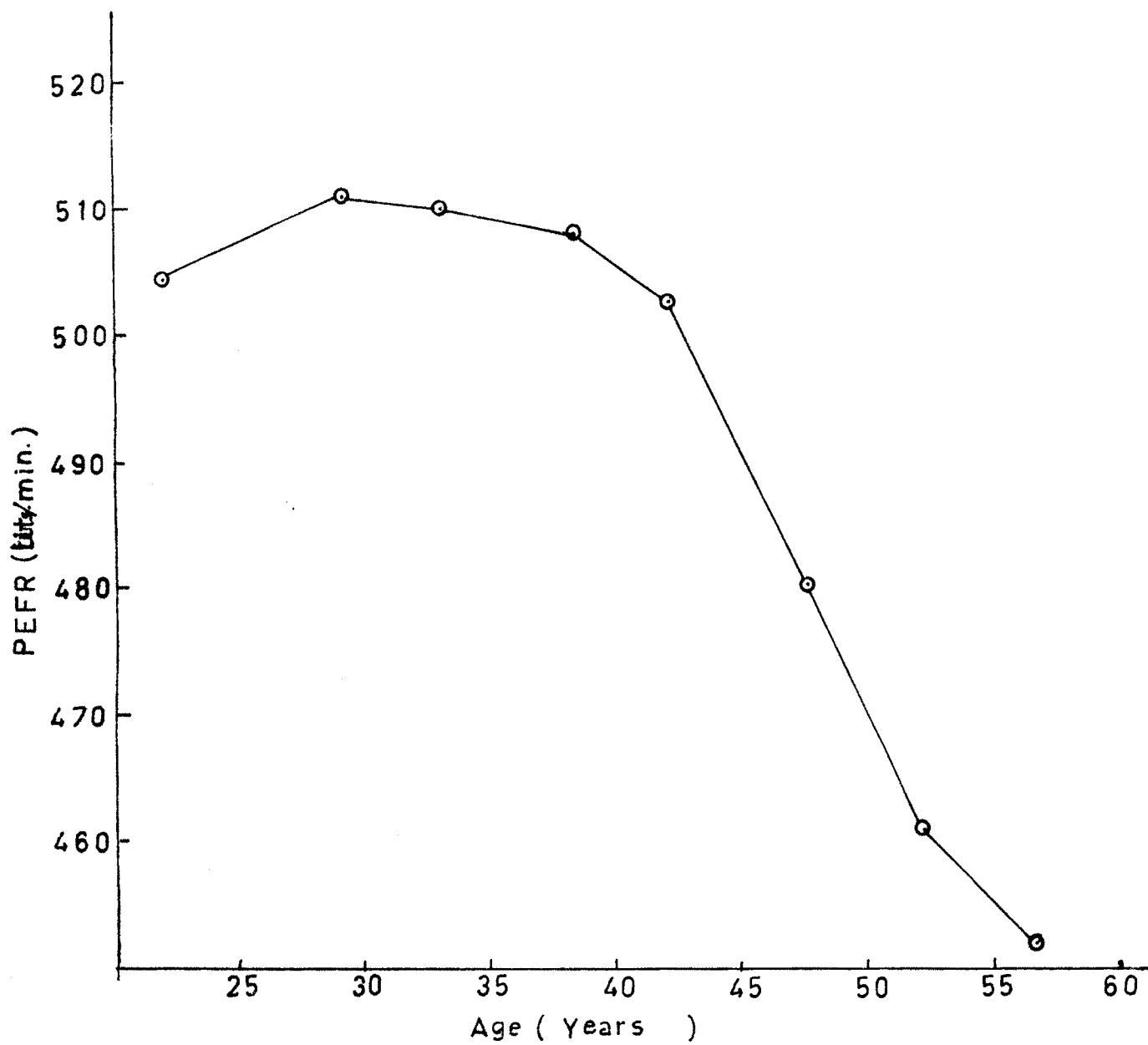


Fig.No. 5: Peak-expiratory-flow-rate as a function of age.

PEFR. The Peak Expiratory Flow Rate is negatively correlated with the age of the workers. ($r = -0.8651$). The values of PEFR show rapid decrease from age of 40 years. The average PEFR values of the workers are given in table 21., and are graphically represented in Fig. No. 5. The highest values of PEFR can be observed in the age-group 26-30 whereas, age group 56-60 shows lowest values of PEFR. Thus, it clearly denotes that PEFR decreases from 40 years alongwith the working capacity of the workers.

6. BLOOD-PRESSURE (B.P.):

The blood-pressure of an individual is also an important parameter to know the physical fitness. Higher values of blood pressure are the indicators of unfitness of an individual. Blood-pressure increases with age. In present study the observations showed that both systolic and diastolic blood pressures are highly correlated with age (Table 26). From the age of 21 years B.P. values increase from (121.5, 77.8) mmHg to (137.2, 94) mmHg at the age of 60 years. Average B.P. values of the workers both systolic and diastolic are given in table 23 and table 24. This gradual increase in B.P. is represented graphically in Fig.No. 6. There is no correlation of age with pulse pressure.

7. STEP TEST:

Step test is the main test for physical fitness and is the back-bone of the present investigation. As discussed in ^{the} _^

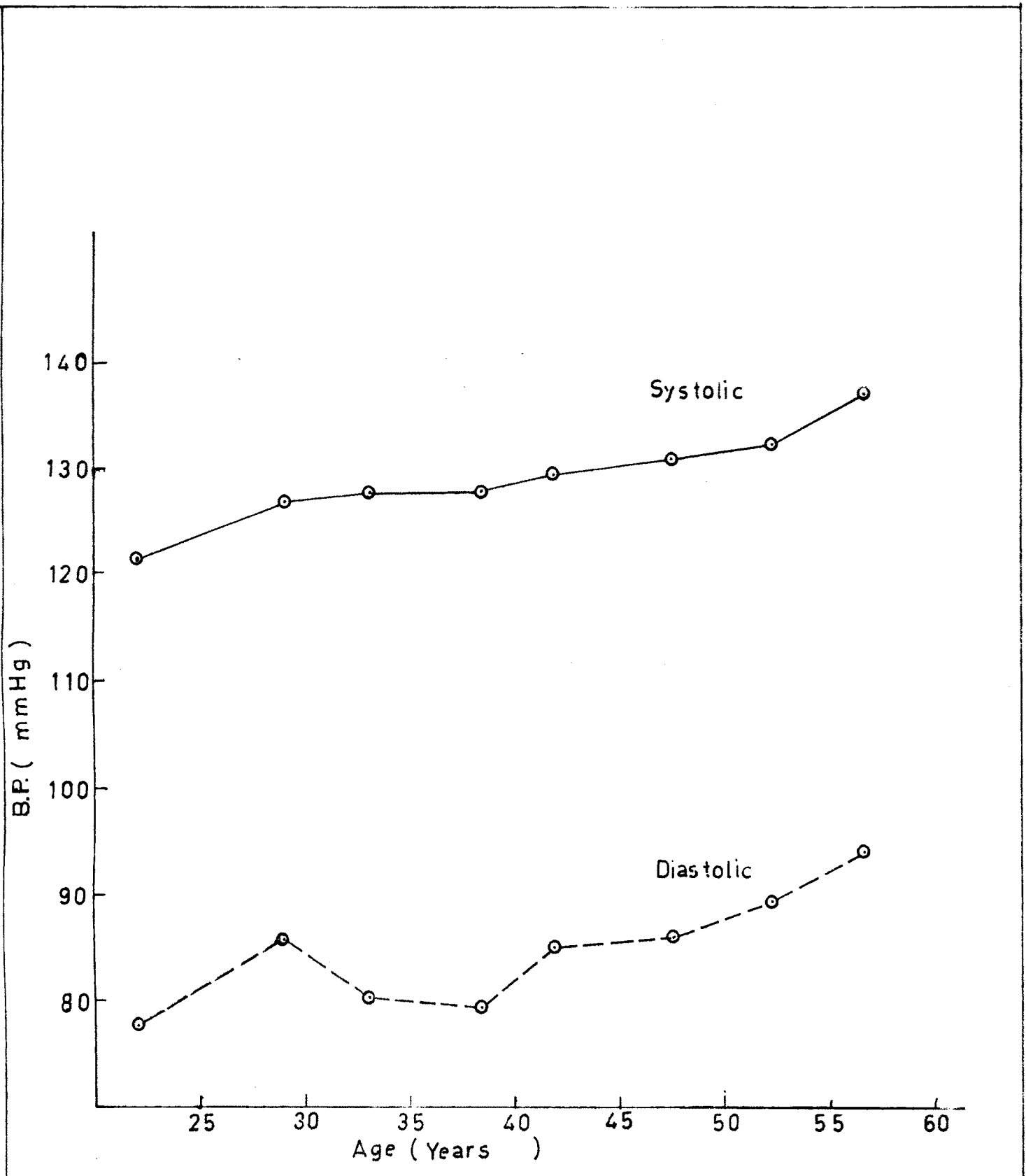


Fig.No. 6: Blood Pressure as a function of age.

Table 24: AVERAGE DIASTOLIC B.P. OF THE WORKERS

Age Group	Average	S.D.	S.E.
21-25	77.84	± 3.050683	0.6101366
26-30	86	± 3.4156503	0.68313
31-35	80.64	± 3.9038443	0.7807688
36-40	79.72	± 2.7916542	0.5583308
41-45	85.28	± 2.8213472	0.5642694
46-50	86.24	± 3.8867296	0.7773459
51-55	89.6	± 2.3323808	1.0430724
56-60	94.4	± 2.9393877	1.3145341

Table 25: AVERAGE STEP TEST SCORE OF THE WORKERS

Age group	Average	S.D.	S.E.
21-25	60.3552	± 6.3093126	1.2618625
26-30	64.34	± 7.5545704	1.5109141
31-35	61.2484	± 10.03517	2.007034
36-40	60.638	± 9.1525821	1.8305164
41-45	59.9836	± 7.1253046	1.4250609
46-50	56.3836	± 7.7509311	1.5501862
51-55	55.182	± 3.0366192	1.3580174
56-60	53.244	± 2.2660503	1.0134085

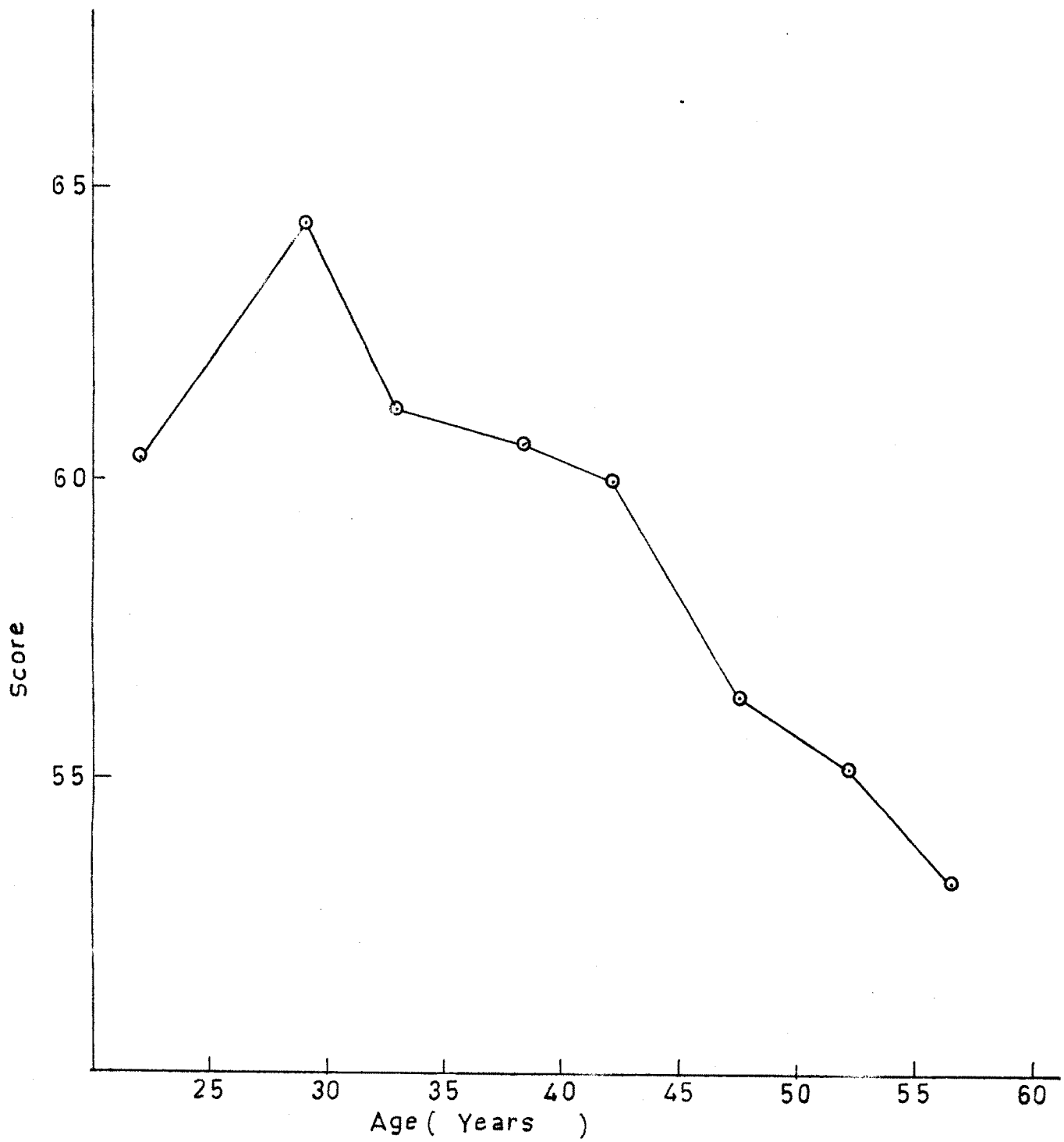


Fig.No.7:Step test as a function of age.

previous chapters modified step Test is performed to know the physical fitness of the factory workers belonging to various age groups. The test score which is computed from the pulse count taken during the recovery after the exercise of stepping is a measure of individuals cardiovascular efficiency and further grading their physical fitness.

The present study showed the negative correlation of step test score with age ($r = -0.8609$) simply, it can be stated by following the table 25 and Fig.No. 7. All the age groups are showing low-average physical fitness of the workers. None of the age groups excludes the average score value above 65. All the groups are ranging between 53 to 64 i.e. low average gradings.

TABLE 26: VARIOUS PHYSIOLOGICAL FACTORS CORRELATED WITH AGE OF THE WORKERS:

Sr. No.	Physiological factor	r
1.	Body Ht. (Cms.)	-0.6692
2.	Body Wt. (Kgs.)	0.4632
3.	HR (Beats/min.)	0.8595
4.	PEFR (Lits/min.)	-0.8651
5.	S.B.P. (mmHg)	0.9578
6.	D.B.P. (mmHg)	0.8352
7.	Step Test: Score	-0.8609