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The effect of Predetermined Training Loads Using Arms and Legs on Response of Blood Pressure and Heart Functions –A Comparative Study.

Abstract: The study aims at investigating the functional responses of the heart and the blood pressure to different presented training loads using arms and legs. These responses include Systolic and Diastolic blood pressure, pulse pressure, cardiac output, stroke volume and the recovery of heart rate.

The test has been applied to eighteen healthy male students from the Palestinian Technical College (Khadoury) in period from 15-20/4/2006. The mean age of the random sample is 21 years with a standard deviation of 3.4 month. The sample has been chosen according to certain Homogeneity Norms including body weight, height, heart rate at rest and the muscular strength of the arms and legs.

The load at using the same The determination of the training loads was based on the output of a pilot study containing ten students from the same population . The load intensity was defined by 70% of the maximum heart rate of all variables. The arms training load was performed using a modified version of the Electronic Rowing Machine. The modification of the machine was intended to restrict the stroke to the arms only. The legs training load has been accomplished using The Ergometer Bicycle. Measurements were carried out in the Physiological laboratory of physical efforts in the Palestinian Technical College (Khadoury). Pre and post tests data were collected. The recovery heart rates were measured three minutes after the end of the effort.

Results revealed statistically significant differences in the majority of the physiological variables. When comparing the response to the two training loads, the arms and the legs, the arms training loads has shown an increase in the systolic blood pressure, diastolic blood pressure and prefer resistance. The legs training load on the other hand showed an increase in the heart stroke volume and the cardiac output but a decrease in the blood prefer resistance. The recovery Heart rate has been delayed after the legs training load compared to level of the load intensity.

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(Guevel. maiestetti.Prou.Dubois.&marine.1999)

Lactate Blood

(Amamura. et al .1998)

Niess etal) Karate
DNA (1999

(Aminoff.Smolander .Kohonen &.Louhevaara.1997)

(Kang.et al.1997)

(Mathiassen & Aminoff.1997)

(Upper trapezius muscle)

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.(Overload training)

Figure 1 displays a 3x3 grid of scatter plots illustrating the relationship between various health and fitness-related variables. The variables are arranged as follows:

- Top Row:** Paraplegia, Arm or leg imputation, Fitness Related
- Middle Row:** MBP, PP, DBP, PR, SBP
- Bottom Row:** MBP, PP, DBP, PR, SBP

The plots show different levels of correlation and regression lines, with some plots including a legend for the regression line (e.g., 'Q', 'SV', 'RHR'). The axes are labeled with values ranging from -1 to -4, and the plots are arranged in a grid with a central plot (PP) and surrounding plots (MBP, DBP, PR, SBP, Q, SV, RHR).

	SV	Q	:	
DBP		SBP		-2
PR		MBP	PP	
	SV	Q	:	
			.	
				-3
	—	—		
	RHR			-4
			:	
.	—	—	:	
.	—	—	18 :	
2006/4/20 -15			:	
			:	
(Burkett, Philips, & Paul 1997)				-

Arm Ergometer

(Aminoff, et al,1997) .

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30-23

.(59 – 54)

SBP HR :

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(Baltaci, Magulkoic Kelestimur, Ozmerdivenli ,& Kutus,1997)

(1)

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18 = .

0.27	3.38	170		Body Height
0.44-	6.52	65.4		Body Weight
1.15	20.8	74.16	/	Heart Rate
1.67	15.55	112.40		Seated Rowing
1.78	61.14	145.22		Leg Press

1.78+ 0.44-

(1)

3+ 3-

.

:

independent variables -1

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: . : -2

systolic blood pressure(SBP) -

diastolic blood pressure(DBP) -

pulse pressure(PP) -

main of blood pressure(MBP) -

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heart rate HR -

cardiac output Q -

Stroke Volume SV -

recovery of heart rate RHR

□

□

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Restameter " " -1

Monark	Ergometer bicycle	-2
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Sphegmomanometer " -3

Abally Company " " -4

sport tester -5

stop watch -6

" " -7

: (1997)

0 6-(/)

$$0.5 + 100 = (3 \quad)$$

06 - (/)

· X -

(1984) -

$$R = P/Q \quad :$$
$$2I(\mathbf{X}) = \mathbf{P}$$
$$= Q$$

/ /

Fox) -

: (& Mathews, 1981

$$\cdot \quad + \quad =$$
$$:(\quad)$$

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$$\text{target heart rate (THR)} = \frac{\text{maximum heart rate (MHR)} - 70}{10} \times 70$$
 (Fox & Mathews,1981)

$$\frac{162 - 70}{10} \times 70 = 644$$

Difficulty Level
 Stork Rate
 24
 /
 15 5
 :
 :
 :
 .(83.3) 500 -
 .(/ 70 – 60) -
 6 -
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2006/4/ 20 -15

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.1
.2
Skew ness : .3
t – Test : " " .4

(3 2)

(2)

18 =

	" "						
	11.43	13.70	168.43	12.34	117.35	/	SBP
	3.96	8.14	84.50	11.10	71.28	/	DBP
	16.12	8.15	84.92	5.65	46.07	/	PP
	3.60	9.36	100.81	13.28	86.64	/	MBP

	4.62	7.15	79.16	8.33	67.67	3	SV
	32.5	0.86	12.82	0.49	5.02	/	Q
	2.51	3.55	16.43	1.55	18.79	/	PR
						/	

0.05 2.11 = " "

(2)

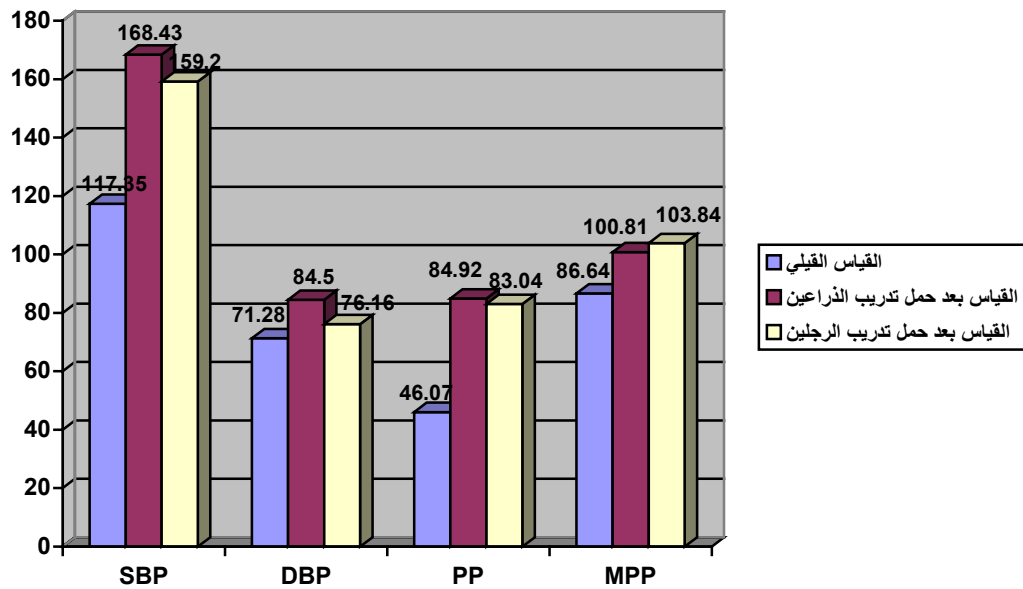
(3)

18 =

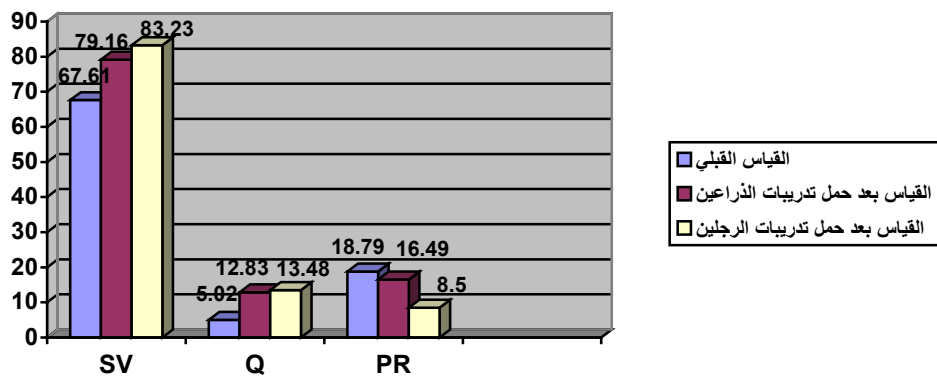
	" "						
	10.31	11.34	159.20	12.34	117.35	/	SBP
	1.52	7.67	76.16	11.10	71.28	/	DBP
	16.00	7.67	83.04	5.65	46.07	/	PP
	4.50	8.58	103.84	13.28	86.64	/	MBP
	5.98	6.73	83.22	8.33	67.67	3	SV
	35.25	0.88	13.48	0.49	5.02	/	Q
	12.70	2.97	8.50	1.55	18.79	/ /	PR

0.05 02.11 = " "

(3)



(1)



(2)

Q

SV

PR

(4)

18 =

	" "						
	2.14	11.34	159.20	11.70	168.42	/	SBP
	3.08	7.67	76.16	8.14	84.50	/	DBP
	0.69	7.67	83.04	8.15	84.92	/	PP
	0.98	8.58	103.84	9.36	100.81	/	MBP
	2.24	6.73	83.22	7.15	79.16	3	SV
	2.20	0.88	13.48	0.86	12.82	/	Q
	7.08	2.97	8.50	3.55	16.43	/ /	PR
	3.09	9.15	92.17	7.66	83.20	/	RHR

0.05 2.11 = " "

(4)

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 %70
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 (3,2)
 (2)
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 Burkett et al.) " " (Weussland et al. 1997) " "
 (Arm Ergometer) (al.1997
 (3)
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 —
 (Jonson & Hardy 1997) "
 (Howley & Don Franks, 1992)
 (Acute adaptation)
 (Immediate Effects) (1988)
 .
 SV Q
 .(Keteyian et al. 1997) (Kang et al. 1997) :
 (3,2)

11.43

10.43

(1984)

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Blood

Flow

PP

Burkett, Phillips, &)

(3 2)

(Paul, 1997

16.0-

16.12

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Q

HR

% 70

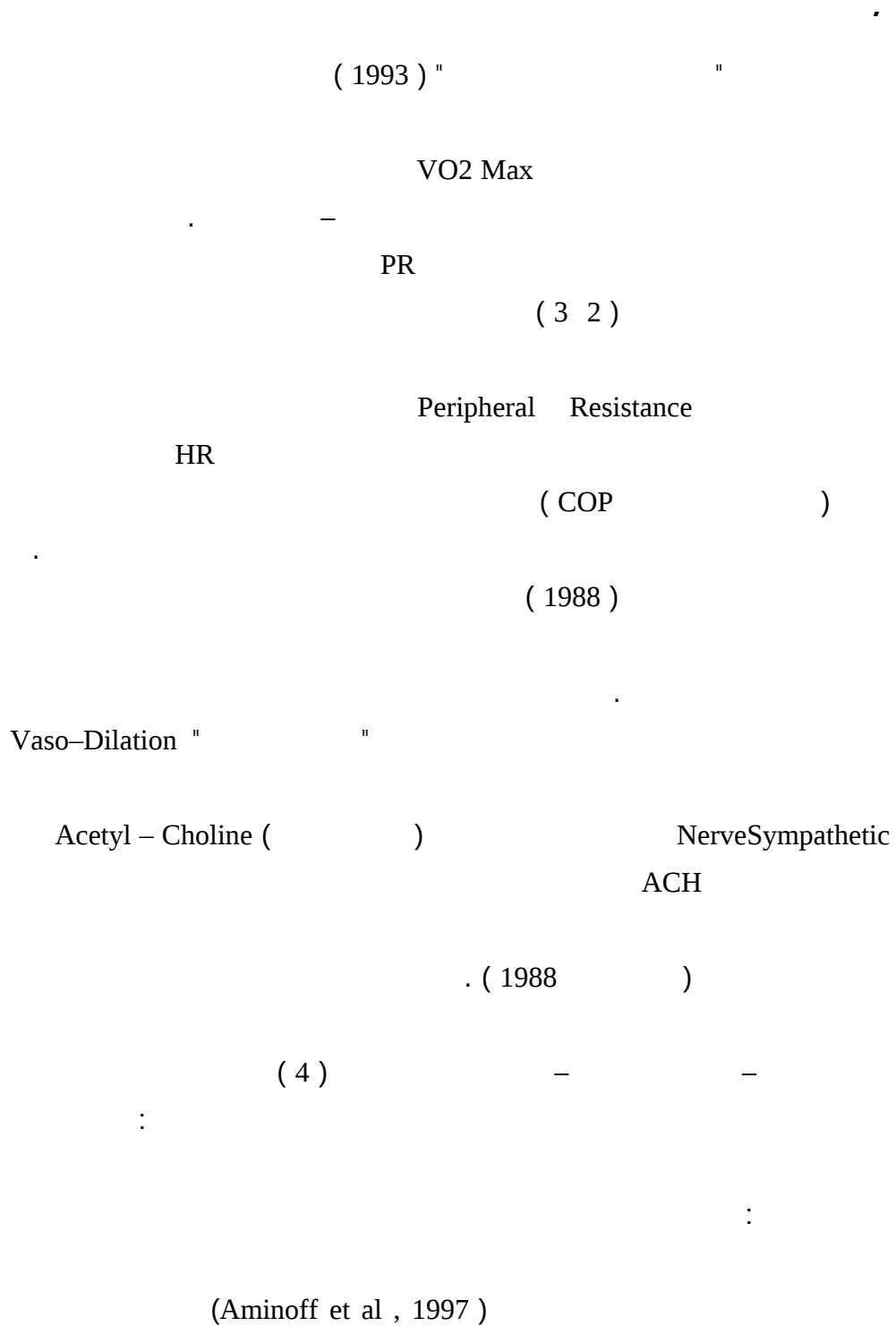
/ 162

SV

5.98

4.62

.Q



(1984)

(4)

SV

RHR

Q

-

-

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-

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SV

(4)

.2.42

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% 70

-1

-

:

- PP

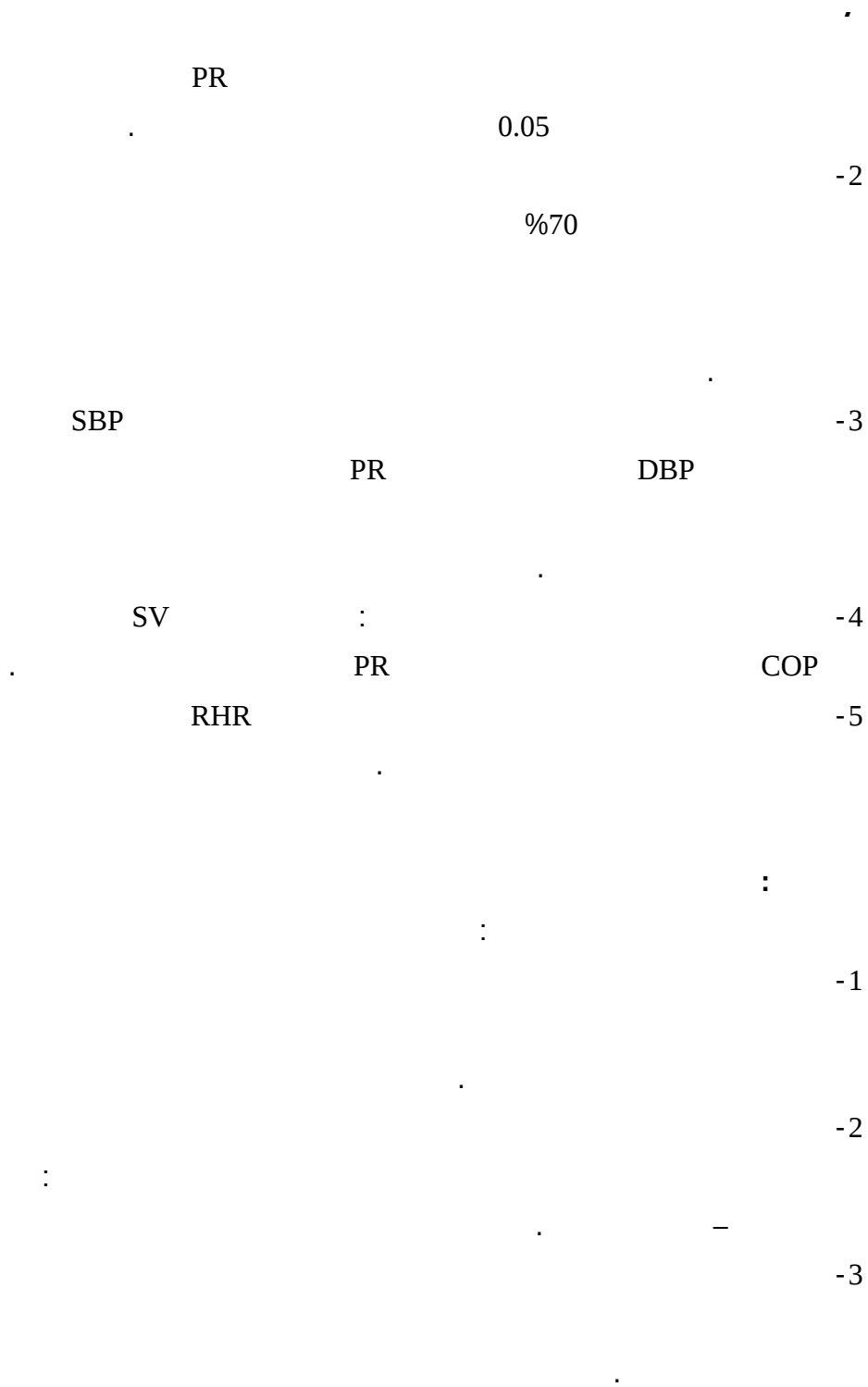
- DBP

- SBP

Q

SV

- MBP



1. (1999) .
2. (1997) .
3. (1993) .
4. (1998) .
5. (1984) .

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