



CHAPTER III

RESULTS

One hundred and four healthy Thai male (17-83 year-old) were selected and interviewed about the physical activities. These volunteers were divided into 4 aged groups and each groups were again divided into 2 subgroups : aerobic-trained and untrained as expressed in table 1 which showed the average age, weight and height of each aged groups.

Maximal Oxygen Uptake : $\dot{V}O_{2max}$.

Table 2 showed that $\dot{V}O_{2max}$ of untrained subjects was 44.86 ± 4.18 and 43.76 ± 7.97 ml/min/kg of 17-30 and 31-40 aged groups. The change of $\dot{V}O_{2max}$ with age was not statistically significance.

In aerobic-trained, the $\dot{V}O_{2max}$ of 17-30, 31-40, 41-50, and more than 50 year-old from table 2 were 60.61 ± 4.01 , 54.72 ± 5.26 , 47.14 ± 2.57 and 36.60 ± 5.51 ml/min/kg, respectively. The value of $\dot{V}O_{2max}$ of younger aged groups were significantly higher than the older ones ($p < 0.01$ and $p < 0.001$).

The comparison between aerobic-trained and untrained indicated that the $\dot{V}O_{2max}$ of both 17-30 and 31-40 year-old aerobic-trained ones were significantly higher than of untrained in the same aged groups ($p < 0.001$).

Anaerobic Threshold

The data from table 3 demonstrated that the values of anaerobic threshold of 17-30, 31-40, 41-50 and more than 50 year-old untrained subjects were 33.52 ± 4.32 , 26.74 ± 4.98 , 24.41 ± 4.00 and 14.68 ± 2.89 ml/min/kg, respectively. The changes of anaerobic threshold in different aged groups were statistically significance ($p <$

0.001). It was indicated that only the anaerobic threshold of 31-40 year-old was not significantly different from 41-50 year-old ones.

From table 3, the anaerobic threshold of 17-30, 31-40, 41-50 and more than 50 year-old aerobic-trained subjects were 45.21 ± 5.30 , 38.68 ± 5.99 , 29.27 ± 3.37 and 24.16 ± 2.20 ml/min/kg, respectively. The values of anaerobic threshold of younger aged groups were statistically significance higher than the older ones ($p < 0.01$ and $p < 0.001$).

The comparison between aerobic-trained and untrained in table 3 showed that the values of anaerobic threshold of aerobic-trained were higher than untrained significantly in every aged group ($p < 0.05$ and $p < 0.001$).

Time Constant of Oxygen Uptake Kinetics at 50% $\dot{V}_{O_{2max}}$ (τ)

Table 4 indicated that the time constants (τ) of untrained subjects were 51.02 ± 5.72 , 61.57 ± 12.32 , 62.85 ± 14.31 and 77.20 ± 17.49 seconds in 17-30, 31-40, 41-50 and older than 50 year-old, respectively. The time constant (τ) of 17-30 year-old was less than the value of the older ones ($p < 0.01$ and $p < 0.001$). The time constant (τ) of 31-40 year-old was less than of the more than 50 year-old subjects significantly ($p < 0.01$) but it was not different from of the 41-50 year-old one.

The time constants (τ) of 17-30, 31-40, 41-50 and more than 50 year-old aerobic-trained in table 4 were 44.69 ± 13.56 , 47.92 ± 12.64 , 52.55 ± 9.54 and 54.21 ± 7.58 seconds, respectively. The changes of time constant (τ) were not statistically significance between different aged groups.

The comparison between aerobic-trained and untrained subjects in table 4 indicated that the time constant (τ) of both 31-40 and more than 50 year-old aerobic-trained were less than untrained in the same aged groups ($p < 0.01$). But the time constants (τ) of both 17-30 and 41-50 year-old aerobic-trained were not significantly different from ones of both untrained aged groups.

Table 1. Physical characteristic of the subjects (mean \pm SD).

Number	Activity	Age (years)	Weight (Kg)	Height (cm)
15	untrained	25.47 \pm 2.45	61.50 \pm 7.91	170.07 \pm 3.37
15	aerobic-trained	24.80 \pm 4.23	60.80 \pm 5.43	170.13 \pm 5.95
19	untrained	36.05 \pm 2.93	66.63 \pm 9.72	168.84 \pm 5.48
16	aerobic-trained	36.06 \pm 3.55	64.53 \pm 5.31	170.56 \pm 4.26
8	untrained	45.00 \pm 2.56	70.25 \pm 7.68	168.63 \pm 4.07
10	aerobic-trained	44.80 \pm 2.90	62.15 \pm 9.27	167.70 \pm 6.11
11	untrained	63.45 \pm 9.59	66.36 \pm 4.98	164.18 \pm 5.81
10	aerobic-trained	64.20 \pm 5.77	63.30 \pm 6.84	168.70 \pm 5.31

Table 2. The maximal oxygen uptake ($\dot{V}O_{2max}$) of 34 untrained and 51 aerobic-trained subjects in different aged groups (mean \pm SD).

Age (years)	$\dot{V}O_{2max}$. (ml / min / Kg)		Aged groups comparison	
	Untrained	Aerobic-trained	Untrained	Aerobic-trained
17 - 30	44.86 \pm 4.18	60.61 \pm 4.01 ***] NS] -] -] **] ***] ***] ***
31 - 40	43.76 \pm 7.97	54.72 \pm 5.26 ***		
41 - 50	-	47.17 \pm 2.57		
> 50	-	36.60 \pm 5.51		

*** P < 0.001

** P < 0.01

* P < 0.05

NS Not significant

Table 3. The anaerobic threshold of 53 untrained and 51 aerobic-trained subjects in different aged groups (mean \pm SD).

Age (years)	Anaerobic threshold (ml / min / Kg)		Aged groups comparison	
	Untrained	Aerobic-trained	Untrained	Aerobic-trained
17 - 30	33.52 \pm 4.32	45.21 \pm 5.30 ***		
31 - 40	26.74 \pm 4.98	38.68 \pm 5.99 ***	***	**
41 - 50	24.41 \pm 4.00	29.27 \pm 3.37 *	NS	***
> 50	14.68 \pm 2.89	24.16 \pm 2.20 ***	***	***

*** P < 0.001

** P < 0.01

* P < 0.05

NS Not significant

Table 4. The time constant of oxygen uptake kinetics at 50% \dot{V}_{O_2max} (τ) of 53 untrained and 51 aerobic-trained subjects in different aged groups (mean \pm SD).

Age (years)	τ (sec)		Aged groups comparison	
	Untrained	Aerobic-trained	Untrained	Aerobic-trained
17 - 30	51.02 \pm 5.72	44.69 \pm 13.56 NS		
31 - 40	61.57 \pm 12.32	47.92 \pm 12.64 **	**	NS
41 - 50	62.85 \pm 14.31	52.55 \pm 9.54 NS	NS	NS
> 50	77.20 \pm 17.49	54.21 \pm 7.58 **	NS	NS

*** P < 0.001

** P < 0.01

* P < 0.05

NS Not significant