

The Problem of Physical Training Confronting Table Tennis Players in Japan

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Abstract

The purpose of this study was to evaluate the physical fitness and strength of Japanese elite table tennis players in comparison with the national averages. Subjects were Japanese elite table tennis players who participated in the 24th Olympic Games in Seoul (1988) and/or participated in the 41st World Championship in Chiba (1991). Subjects, who were 15 men and 11 women, were measured in maximal oxygen uptake ($\dot{V}O_2\text{max}$), back strength and vertical jump. The $\dot{V}O_2\text{max}$ of all players were superior to that of the average Japanese. However, the back strength and the vertical jump of about half players fell below those of the average Japanese. The results indicated that Japanese table tennis players and coaches might under-emphasize the muscle strength training in the entire practice and training programme.

Introduction

Right after the 24th Olympic Games in Seoul in 1988, Japan Table Tennis Association (JTTA) issued the Game Report (3), in which the head coaches quoted the lack of physical fitness as a significant cause for the dissatisfying results (Table 1). So, the purpose of this study was to ascertain their comment and to consider how it was brought about.

Methods

Subjects were Japanese elite table tennis players who participated in the Seoul Olympic Games in 1988 (4 males and 3 females) and/or the World Championship Games in Chiba in 1991 (11 males and 8 females). We measured their maximal oxygen uptake ($\dot{V}O_2\text{max}$), back strength, and vertical jump, because these three measures represent the standard method of assessment for physical fitness and strength, not only for table tennis players, but also for the average Japanese person (5), hence allowing direct comparison. The $\dot{V}O_2\text{max}$ was determined by a direct method through a treadmill run-

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Table I. The results of Japanese table tennis players in Games of 24th Olympiad Seoul (23 Sep. - 1 Oct. 1988)

	Name of player	Age (yr)	Results	
			Singles	Doubles
Men	Ono, S.	32	Best 16	1st Stage
	Miyazaki, Y.	29	1st Stage	
	Saito, K.	26	1st Stage	1st Stage
	Watanabe, T.	26	—	
Women	Hoshino, M.	22	Best 16	4th Place
	Ishida, K.	20	1st Stage	
	Uchiyama, K.	19	1st Stage	—

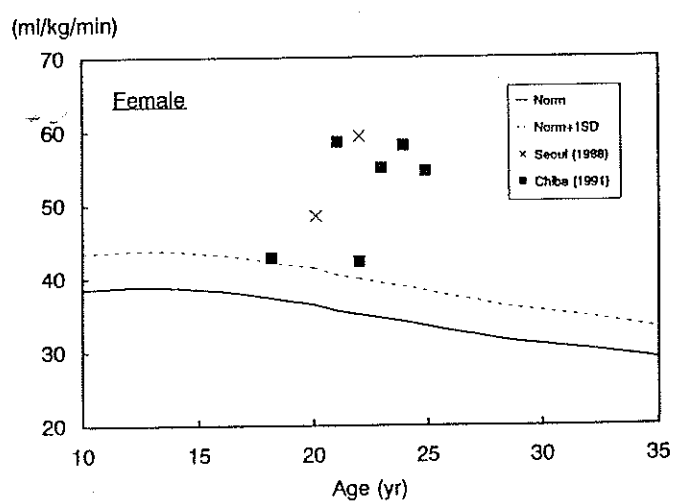
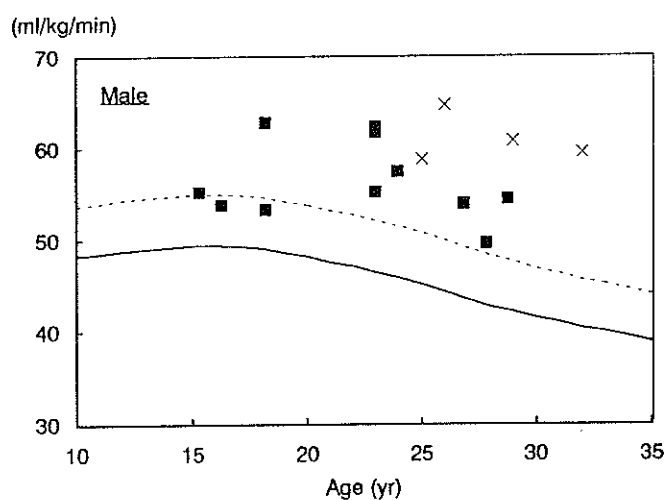


Fig. 1. Maximal oxygen uptake ($\dot{V}_{O_2, \max}$) of subjects.

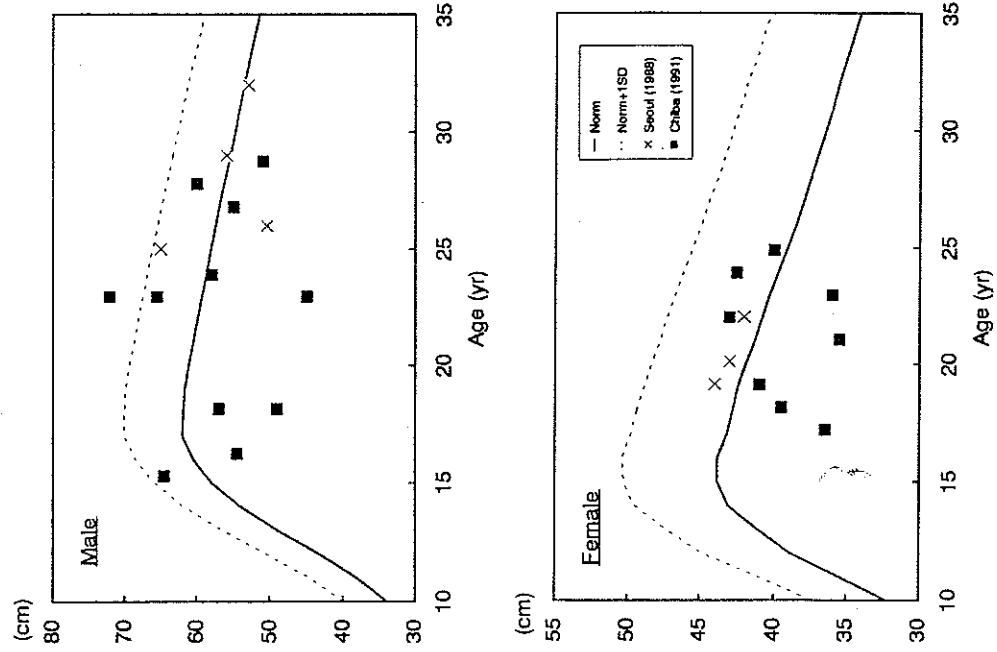


Fig. 3. Vertical jump of subjects

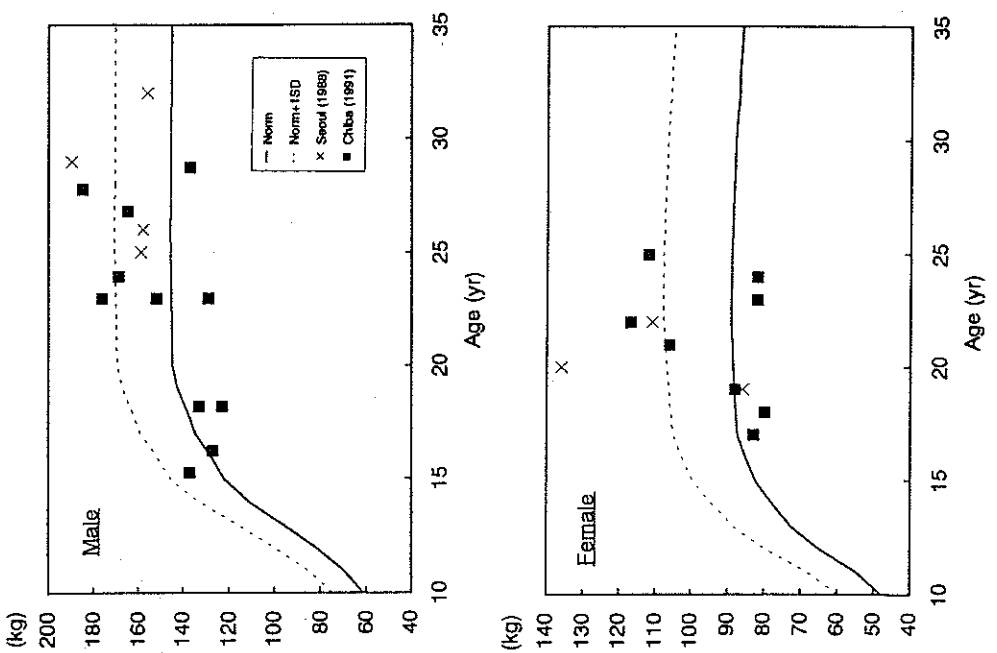


Fig. 2. Back strength of subjects

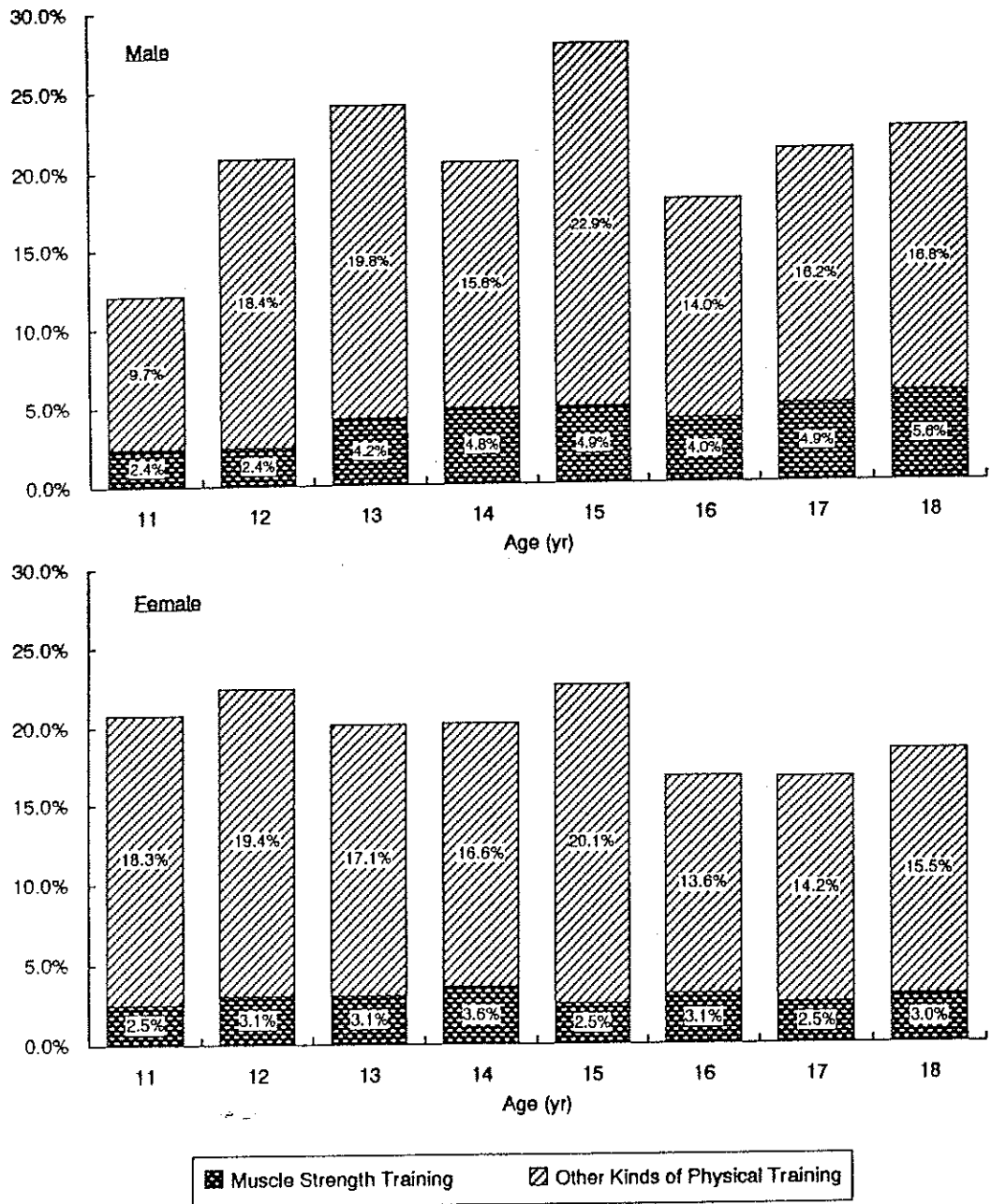


Fig. 4. Percentage of physical training hours in entire practice and training program in Japanese junior-class elite players. (From the survey by Japan Table Tennis Association (JTTA) in 1983).

ning protocol with stepwise increasing speed. The back strength was measured as the maximal lifting force with a stooping posture. The vertical jump was measured as the maximal height, when a subject jumped vertically without an approach run. Each measurement was held one month before the Olympiad or three months before the World Championship.

Results

Figure 1 indicates $\dot{V}O_2\text{max}$ of male and female players in connection with age. The $\dot{V}O_2\text{max}$ of both Seoul players (cross mark) and Chiba players (filled square) is far superior to that of the average Japanese, irrespective of sex. Figure 2 indicates back strength of the players. The back strength of the Seoul players was above the norm, except for one female. However, unlike $\dot{V}O_2\text{max}$, they came closer to the norm. To make matters worse, the back strength of about half of the Chiba players fell below the norm, regardless of sex. Figure 3 indicates vertical jump. The values of the Seoul players dropped further down to the norm, compared to the back strength. And it is even worse for the Chiba players. Nearly two-thirds of them were below the norm, regardless of sex.

Discussion

The $\dot{V}O_2\text{max}$ values of Japanese top table tennis players were as high as the values of other elite ball-game players (1,2,4). However, it was found that the level of muscle strength and muscle power for elite table tennis players was similar to that of the average person. One of the reasons why the back strength and the vertical jump were performed so badly seemed to be connected to the lack of muscle strength training. Figure 4 indicates the mean percentage of physical training hours in the entire practice and training program in Japanese junior-class elite players, surveyed in 1983. The percentage of muscle strength training (including power training) was extremely low, no more than 6%, regardless of sex and age. The finding suggests that this aspect of physical training may have been under-emphasized, and that this could account for the poor performance in back strength and vertical jump for elite players. Therefore, the balanced training, including more muscle strength training from teens, may be necessary for table tennis players.

References

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