

Medical Supervision on World Champions of Table Tennis

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From 1959 to 1991, Chinese Table Tennis Team has awarded 71.5 world champions. Of them, 85 person/time awarded 35 men's titles, and 74 person/time 32 women's.

In the World Table Tennis Championships held once every two years, Chinese players awarded 59.5 world champions in 14 world competitions. A Chinese player awarded Women's Double with a Korean and it was counted as a half.

The World Cup of Man's Single is held every year since 1980 and China has taken part 12 times with 7 champions.

In the 24th Olympic Games, China awarded 2 table tennis champions.

The world Cup of Teams is held every year since 1990 and China awarded one.

I joined the Chinese Table Tennis Team as the doctor in 1960. In the fight for the world championships, I and other doctors have done some work of medical service and supervision with the guidance from other fraternal units. I would like to make a short summary here as follows:

1. A General Survey

- (1) Sex: 35 males and 32 females
- (2) Age of awarding champion: 19-31 males, 16-30 females
- (3) Years of Training: male 5-17; female 3-16
- (4) Body Height: male 165-183cm; female 150-170cm
- (5) Body Weight: male 55-78kg; female 46-66kg
- (6) The difference between right and left upper arms measurements:
male 2.39cm; female 2.20cm
- (7) The difference between right and left lower arms measurements:
male 1.88cm; female 1.55cm
- (8) Build: well-proportioned, relatively long and slender, relatively light weight
- (9) Field of vision: normal or broader than common.

2. The physiological feature of table tennis players

- (1) High tension of the central nervous system
- (2) High technique
- (3) Heavy load

3. Work contents

According to the above mentioned characteristics, we have done the following work:

(1) Regular physical examination. Before the winter and the summer exercises, we all have an examination. It includes routine physical examination, chest fluoroscopy, electrocardiogram. A laboratory test includes HBsAg, liver function, hemochrome. Through tests, we can know the real situation of players' health, and diagnose and cure in time. We discovered some of the players have pneumonia while there was no clinical symptom. Some others had HBsAg(-), Hepatitis B. In the test of ECG, we found pre-excitation syndrome, left anterior hemiblock, atrioventricular block, ventricular extrasystole, nodal escape, etc. Then we made the further examination, diagnosis and cure. As the players frequently participated in competitions both at home and abroad, irregular tests were made to avoid the spread of infection and other diseases.

(2) Prevention

We talked with the players about the knowledge of health care, so that they may prevent hurt, disease and fatigue.

As for the prevention of seasonal infections, we lay emphasis on respiratory and gastro infections. We delivered medicine to everybody.

We made a general survey of HBsAg in 1980. Miss Cao and Miss Tong were both world champions. Unfortunately both of them were found HBsAg(-), and were not allowed to have long time of training. With high responsibility for the State and the players, we tried a series of measures which proved effective later: They live, take food and used washing room all alone, separated from others. They took vitamin, liver protective medicine and bee milk for a long time. They had liver function tests every 3-6 months and p Bp tests every week. The last was an observation on the playground.

Under the doctor's supervision, Miss Cao awarded 5 champions of the world and Miss Tong, three.

One point is worth mentioning here. The two girls had normal liver function during their stay with the National Team. Miss Cao left the team in 1987 and returned home. Owing to lack of medical supervision and regular life, her liver function became abnormal.

Now we are still carrying out the above-mentioned measures and no hepatitis B patient was found, nor was an HBsAg(-) carrier. Those whose antibody of HBsAg is lower than normal level were injected vaccine of Hepatitis B.

(3) Medical observation

A. Every Saturday morning we tested p, Bp of players and recorded their weight. With years of observation, we classified all the players. Every player had one's own reaction. The test showed us whether the training arrangement was appropriate or not.

a. Classification of the functions of heart and blood vessel

For example, before the 36th World Table Tennis Championship Competition, about one third of boys felt tired in the round robin with their blood pressure over 80. Later the training changed from 5 games to 3 games and those players' blood pressure went down below 80.

When we tested some of the players, their pulse could not be felt. Miss Zheng had auriculoventricular block-2 after the test of electrocardiogram. With a further test, it was affirmed that she had not any serious illness. Another world champion Miss Dai was the same case. After the test of ECG, she had only frequent multiple premature beat and auriculoventricular block-1. With a further test of white blood cells, erythrocyte sedimentation rate, GOT, lactic acid dehydrogenase, it was found her left heart function normal. And she had no myocarditis and overfatigue. After the adjustment of her training time and quantity, her ECG become fully normal two weeks later.

B. Heart functional examination

a. routine ECG

b. PWC 170 m 1405±27 kg.m/min

f 938±26 kg.m/min

c. ACG

Although SFW/RFW of table tennis players is 7.47 ± 2.88 , which is approximately the same as that of stamina athletes' 7.07 ± 2.23 , greater than strength athletes' 5.24 ± 1.08 and speed athletes' 5.27 ± 1.43 . The diastolic function of Table Tennis Player is better than other events.

C. Check up Pulmonary function

The vital capacity, maximum breathing capacity and vital capacity time of table tennis players, if compared with swimmers, runners and others, except that the vital capacity is a little lower than that of others, all are stronger levels. Females' values have not reached their due pulmonary function.

D. Determination of nyctering output of urinary protein

In February–March, 1986, we made determination of urinary protein of 132 person/times in the national men's team. The following is a comparison between the champions group and the accompany group.

The result of the above table shows that the average protein of the champions was lower than that of their control except on February 19, and that the training quantity of the control was stronger. It was true that the control did play harder in running, smashing the ball and frequency.

It was owing to the differences in level, training plan and the way of playing among players that their training quantity varied a great deal.

In the examination, a player was found to have latent nephritis. He said that he felt dim eyesight and could not see the ball clearly. He also felt very tired and was not able to control himself in the training. However, nothing was wrong with his urinary system. After diagnosed definitely as chronic nephritis, he returned to his native province.

Comparing with the swimmers, their average urinary protein in the training period was 22.6ml, while that of the table tennis men players was 21.56ml, approximately the same. The tests have shown that such means is an easy, reliable and quick reference of assessing training quantity and players' health.

E. determination of serum testosterone

On the eve of Olympic Games and in the summer training of 1991, we tested 38 person/times with the following results.

Generally speaking, the table tennis players were normal. Ten players of the young man team were tested. Of them, 4 were 16years old, 2 were 15, one was 14, 2 were 13 and one was 12. The differences among them were great. The 12 year old was too young that his serum testosterone was only 40mg. One of the 16years old was 66mg and another 16 was 660mg.

There were also much differences among 21 players of the national team(m). The highest was 1345.6mg, and the lowest 399.0mg. We are trying to find and summarize the cause of it.

F. Examination of nervous system

In comparison with other ball players, table tennis players are the most sensitive ones with accurate analysis abilities. It was proved that China's excellent table tennis players had the record of 102ms and some world champion even reached 70–90ms. The average record of football players was 149ms, basketball players 156ms, handball players 150ms.

We also tested the reaction time and sensibility of ophthalmic electricity with the result as follows:

c. Check Up Nervous System

At present there is no objective index to assess the nervous system. It is due to the great influence of subjective factors that the test of reaction and sensibility of ophthalmic electricity is only for reference

(4) Assessment of Body Quality

Based on the various test with Table 5–8,10, and 12 as standards we made assessments. However, coaches also studied with us and made classifications together.

(5) Means of Recovery

A. Steamed bathing and contrast bathing

B. Tuina

In our long years of practice, we have summed up a set of experiences that shoulders and waist of table tennis players easily react. However, the reactions vary in different times.

Shoulder

At first the muscle felt hard like a tennis ball, if the muscle were wounded you might feel a hard line or hard mass.

Later, the player was not able to smash and his muscle felt soft. The reaction place varies with different types of players:

Swift attackers: musculus triceps brachii, musculus deltoid

Loop players: musculus triceps brachii

Defenders: musculus triceps brachii

Waist

Every world champion had different reaction.

Cai: shoulder musculus triceps brachii, waist, wrist

Li: musculus triceps brachii

Jiang: Musculus triceps brachii

Guo: back part of musculus triceps brachii

Cao, Tong, Liu, Wang: waist

Our main manipulations were:

Shoulder:

the manipulations should be firm, heavy and deep.

Waist: Rubbing heavily, pressing slowly but with strength

Tuina

C. Use nutrition medicine in a rational way. It only serves as a supplement. We hold that food is always better than medicine and we are against the abuse of and cult of nutrition medicine.

D. Have rational meals instead of snacks and partiality for particular kind of food.

(6) Scientific arrangement of training after injury or illness

A. Training after injury: except that he/she is unable to move, all are to train legs, waist and belly if arms are injured and vice versa.

B. After the operation of vermiform appendix, the player must have full rest for two weeks. From the third week, he or she may have minor trainings such as slow walk and slow running. In the fourth week we may arrange a half day of skill training and another half for physical training. One month later all is normal.

C. Experiences and lessons:

Guo, in February 1982 just before the 37th world competition, participated in too many social activities. When coming back to Beijing he caught cold on the way after he had won a prize in his native province. He suffered bronchus pneumonia and was confined in the hospital for 24 days. He was found to have some fever but insisted on taking part in the national competition. The doctor failed to persuade him out so he went so far as to participate in the Asian Games and summer training after the national competition. It was owing to untimely adjustment that he had exertive hemoglobinuria in July 1982, five months after last illness. He did not recover until June 1983. During these 11 months, we made following tests: X-roentgenograph, intravenous polygraph, C-T examination, renal perfusion scanning, three-glass test, 24 hours urine examination for mycobacterium tuberculosis (3 times). We were sure that he had no inflammation, stone and tuberculosis. It was regrettable that if we had insisted on the principle, he would not have had exertive hemoglobinuria.

Qi, had a high fever of 40 Centigrade for anginatancunar antiaditis in the summer training of 1983. The patient had three days of full rest when the fever went away. We

followed the order and advanced step by step to arrange the training. Tests were made on white blood cells, ECG. The result was satisfactory and no complication was found. Nor was streptococcus secondary infection.

(7) A good control of menstrual cycle of women's team could reflect whether the training quantity was appropriate. In 1978 amenorrhea secondary was found and four girls had Stein-Leventhal's syndrome.

In August 1980 there were 24 girls in the team and only one was not normal.

In November 1981, 6 out of 23 were not normal. Tests were made and no gynecological disease was found. We made certain adjustments in their training and nothing wrong had happened.

The girl players took part in the skill training in their menses period in but not all the items in physical training. They were not supposed to have long distance running, waist and belly trainings. However, they usually did not take full rest.

4. Statistics of Common Diseases

It is owing to diagnosis and cure in time that no one failed to win the world championship because of an illness. A few problems to be noticed:

(1) Players are always under the conditions of large training quantity and they are long overexerted. It is no wonder that they cannot easily adjust to fit the changes of climate, life rules, nutrition conditions, psychological and physical surroundings. Their immunological functions are lower than ordinary people and are easier to be attacked by common diseases. For instance, Guo had bronchus pneumonia; Qiu, Zhen, Liang, Ge successively suffered pelvic tuberculosis. As for world champions, they must keep a balance between training and rest after a great game and had better not work continuously.

(2) It is owing to repeated competitions and heavy tasks that once world champions fell ill the doctor has to cure them to a quick recovery. It is no wonder that better medicine and valuable medicine must be used at the same time. According to the follow-up observation, a world champion who suffered recurrence of chronic bronchitis needed treating with imported antibiotics.

(3) In the same observation, we have noticed that among the world champion, there were 11 cervical spondylosis, 1 coronary heart disease, 2 arrhythmia, 2 angiocholecystitis, 3 hyperlipemia, 2 hypertension, 1 bronchitis, 2 gastroenteritis, 2 chronic prostatitis. We are summing up these materials.

Summary

It has made analysis of the general information of 67 players in the men team, including age, years of sports, height and weight.

It also made analysis of and summary of world championships' heart function, lung function, nerve system, urine protein, etc. By means of regular check, prevention, special examination and others.

It has further summarized the rehabilitation ways used for years.