

# The Study on the Pilot's Selection and Reservation Based on Human's Theory of Heredity

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**Abstract**—Because the involvement of pilot cultivation is very costly, so how to make an accurate selection and advanced reservation of pilots is a valuable study topic, how to choose a promising pilot is an important job for aviation field to increase the profits, reduce the risks, how to select the talent teenagers from others is the prerequisite of improving the pilots-training qualification. To solve this problem, we analyzed and summarized the human's theory of heredity and the mature experience of pilot's selection and reservation, proposed the methods of selecting pilots on human's theory of heredity, and put forward the thinking's and measures from the aspects of top design of national human resources, such as promote the early aviation education and propaganda of teenagers, select the budding young from the teenager aviation lovers and launch the education of prenatal and postnatal care of pilots on active duty which should be based on the voluntary condition.

**Keywords**—heredity; genetic gene; pilots-selection; reservation

## I. HUMAN'S THEORY OF HEREDITY AND GENETIC TECHNOLOGY APPLICATION

Recently, genetic technology has already become one of the most effective ways of athletes-selection. There are many researches has proven that there is a great relevant relation between the sports ability (speed, strength, endurance), psychological quality and inherent cause. Heredity means the similarity among generations in the process of biological reproduction, not only the form, appearance, but also the structure, physiological and biochemical characters, it is a kind of conservation and carry-over from the parental generation to filial generation [1, 2]. The normal heredity includes: gender, surface character, physiological and biochemical property, physical quality and other more than 20 types of genetic characters. Gene is the basic unit of characters- controlling. The genetic information is transmitted by genes among generations. According to the research, the physical quality, psychological quality, personality quality and intellectual quality (people see the objective things and the ability to solve the practical problems, shown as the ability of observation, memory, imagination, thinking and judgment) has a close

relationship with genetic factors, especially personality quality and intellectual factors are improved less by nurture[3]. In the year of 2000, the drafts of human's genome sequence finished, which was seen as "the Project Apollo in the science of life" and was called the opening of the first page of life. It is the significant progress of modern science of life. People can find the factors which decide the human body's shape, sports quality, psychological endurance, personality quality, and discuss the adaptation of human body to the environment on the molecular level and then to evaluate individual ability, conditions and potentials.

Gene transmits the genetic information by conducting protein synthesis, and then controls the characteristic expressions. Different physical characters and the sports abilities decide the individual's potential, the famous American swimming athlete Phillips has the distinctive body structure for swimming. His height is 1.87m, upper body is slender and legs are short. He has thin hip muscle which is relaxed and powerful and has a good extension and explosive power, broad shoulders with the armspan 3inches longer than the common people's, foot-length is 14 U.S. shoe size. The arch camber is 15° more than common people's, its flexibility is superb. These unique physical quality advantages and excellent talents made him get the unprecedented achievement and wrote a legend myth of swimming. Meanwhile, genetic factors also play important role in courage and independence, but the personality features have invariance tendency, so the personality features should be the indispensable factors, from heredity- theory –evaluation.

The behavior of one individual has a close relationship with the interior and exterior environment, it is resulted by the inherited and environmental factors. The function of gene can not be separated from the inner and outer environmental influence, every biological character is decided by the heredity and environment together. Yao Ming, Hui Ruqi, Zhang Changning and many excellent athletes are all the best embodiments of good gene inherited characters, they inherited the good gene of tall height, and generally became a sports superstars under the influence of their families. Yao Ming was

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born in a basketball family, his parents were both basketball players, the height of his father is 2.08 m, who used to serve in Shang Hai basketball team; his mother's height is 1.88m, who was the key member of Chinese national basketball team in the 1970s. So all of their successes are the good embodiments of inherited and environmental factors.

## II. THE NECESSITY AND URGENCY OF ACCURATE PILOTS- SELECTION AND ADVANCED RESERVATION

Talents refers to the elites who have the great contributions in the country or their field, they are the tactic resources of one country's development. In the field of aviation, pilots are the talents and elites, they are the key factor of the industry construction and development. But its particularity and importance are inseparable.

The pilot of civil aviation is the participator and operator of the transiting and producing, relates to the safety and regulation of aviation transiting and daily job. The quality and quantity represent the reputation and power of one aviation company, they are the core resources of every aviation company [4]. From the other aspect, the pilot also shows one country's image, the modern professional pilot, especially, the captain, is not only the operator of one civil flight, but also a senior supervisor. So, civil pilot is the important human resource of civil aviation development, their comprehensive qualities play the essential role in the sustainable development of civil aviation. Civil aviation is the skill-intensive industry, the human resource is the first resource in the development of career and subject. And the pilot, who is the most important high-tech human resource, is the key of aviation human resource. In the process of flight talent resource research, we know that: on one hand the flight pilot resource is limited and deficient, on the other hand, the flight pilot resource is the high quality of flight human resource, the flight human resource is also the crucial component of our national defence and economical construction, so in this case, it is the national strategic resource [5].

For America, the pilot deficiency alarm still exists, due to the constantly long slide of aviation, it wasn't so obvious. But according to the new statistics, the aviation transportation in the next 20 years will keep 4.7% growth rate per year, meanwhile, Boeing Company present the data of 5%, which means there are 0.5 million civil pilots are needed all over the world in the next 20 years.

In the recent years, the passenger capacity of Russian civil flight increases 3 times, the rate of growing is 3 times more than the world average rate. In 2012, the passengers of Russian aviation are 74 million, but the ticket prices are still high. The experts said when there is a new flight-line opened, the price of ticket will be reduced 30%. With the increase of the low-price flight company in the Asian-Pacific region, Japan calculates that there will be 9000 pilots' deficiency by the year of 2030. Chinese civil flight has already ranked the second place in the world. As the data shown, in the next 20 years, China will be the fastest developing country in the aviation market, Chinese aviation needs 3200 new pilots every year, but the cultivating capacity is only 2000 pilots, the deficiency is more than 1000 pilots. The deficiency of pilots is the key factor which restricts

the development of aviation. So the conflict between the pilot-deficiency and fast development of civil aviation must affect our national economic structure and development. Although, there is a serious deficiency in every country, the pilot cultivation has a particular restriction.

Firstly, the serious deficiency of potential resources. Recently, in our country's exam-oriented education, apparently, the eyesight of the senior high school students are very poor, there are only less than 20% are qualified, additionally the score of College Entrance Exam, personal will, political ideology and other limitations, there are not so many qualified candidates among more than millions of high school graduates.

Secondly, the high standard of pilots 'comprehensive qualities. To a military pilot resources, with the development of operational missions and weapons, the demands of pilots' qualifications are higher and higher, the pilots must have a higher information literacy, adept operational skills of the advanced weapons and effective and efficient ability to deal with the information of cockpits, accurate ability to sense the air situation and grasp the chance of fighting and the physical and psychological ability to endure the rigor battlefield environment.

Thirdly, the long range of cultivation and the low talent rate. From common to qualified, pilot should go through different phases, different types of aircrafts, different subjects. The training time is 8-10 years, it will be longer for a high qualified pilot, and there are many pilots grounded for various reasons in each training phase.

Fourthly, the high training tuitions. The training of pilots are a high input industry, according to an uncompleted statistic, the training tuition of one civil aviation pilot is about 700,000 RMB, one qualified captain is 3,000,000RMB, the training tuition of military pilots is even higher. The high input decides the particular importance and high value of the talents.

The Long-term Projection of Talent Team Construction in the Civil Aviation points that in the development of a new economic society, the general scale and quality of talent team construction in the civil aviation can not adapt to the sustained development and face to the need of international competition completely, mainly represents in the following aspects: the inconsequence of talent structure, lack of high level and professional international talents, the deficiency of human resource exploitation, etc. Therefore, how to make an accurate selection and advanced reservation of pilots is a valuable study topic, how to found a good foundation, choose a promising pilot is an important job for aviation field to increase the profits, reduce the risks [6]. The years-experience of pilot training is proved that not every healthy, age- suitable ones who went through the trainings can be a qualified or even excellent pilot. To be an excellent pilot, one must has talent. So how to select the talent teenagers from others is the prerequisite of improving the pilots-training qualification. Nowadays, the pilots-selection evaluates the students' body shapes, physical function, and psychological quality and so on. Although it is in the physical, intellectual and psychological factors, the talent-selection mechanism is lagged behind by the development of aircrafts, and it can not adapt to the demand of pilots training, so the new selecting models are expected to design.

Accordingly, it is for reference that we should learn from the ideas of athletes selection, to raise a series pilots-selecting methods based on the human heredity theory and gene technology.

### III. THE THINKING AND INSPIRATION OF PILOTS-SELECTION AND RESERVATION

Talent-selection is the basic part of pilot-cultivation, it plays very important role in the improvement of pilots' talent rate. So it is considered that we may start from the pilots cultivation, emphasize on the inherited factors, environmental and social factors, to build a scientific flight cadets selecting platform which increases the scientificity of pilot selection. Because of the arrival of the age of human genome project plan and post- genome, it provided adequate information and high-tech methods for revealing the human's nature. We may test the flight ability for gene to select and establish the relevant gene bank, master the rules of related flight ability to explore the genetic heredity application in pilot-selection model, which should be a great revolution in the pilot-selections. Meanwhile, we can study on the toppest regulation of talent-cultivation and rules-design.

First of all, we should vigorously promote the early aviation education and propaganda of teenagers. At present, China Aviation Society has already develop the teenagers aviation activity, Air Force also found some teenagers aviation schools all over the country, which is to press the aviation seeds into the children's hearts, lead them to love and dream to flight from childhood. Children are guided by interests and start to learn aviation voluntarily. This measurement can settle the thought and understanding problems, thereby it provides abundant selecting resources of every steps in the future. At the same time, we are calling on the increasing of educational revolution, under the guide of exam-oriented education, strengthen the quality-oriented education. The whole society focus on the teenagers' health-situation, improve the qualification of their body; reinforce the ideological education, set the right outlook and values.

Secondly, it is possible to select the budding young from the teenager aviation lovers. Many successful athletes were found by coaches, consequently, starting the training as early as possible in order to become a professional athletes. The experienced professors know clearly which kind of children are needed and focused. The selection of pilots also can learn from it, the experienced flight schools can abstract the physical and psychological standards, and meanwhile we pay more attention

to the children from the pilot families, we can select them at their young age, then train and guide them pertinently to improve their talent rate in the future.

At last, launching the education of prenatal and postnatal care of pilots on active duty which should be based on the voluntary condition, if the one who doesn't want their offspring's to be a pilot, is not considered. For the other pilots on active duty, as long as they have this thought, we can spread the necessary knowledge of prenatal and postnatal care. Due to the heredity theory, it is likely that their offspring's will be pilots. In addition, the influence of family, for example, demonstration, guidance and necessary protection and education, etc., it is likely that the children from these families will grow to pilots. The excellent gene of pilots can transmit from generation to generation, the design is a typical idea of national strategic human resources reservation, the inherit of generations, and also the only way of one country's prosperous development.

### IV. CONCLUSION

With the development of aviation field of every country of the world, the requirement of pilots will be larger and larger. It takes ten years to grow trees but a hundred years to rear people. The development of education is a sequential process, so we believe that our thinking and measure will increase the quality of pilots-cultivation.

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