

The Design and Development of Testing Information System of Psychodiagnosis for Equestrianism Players

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Abstract

Combining with the characteristics of equestrian sports and the psycho diagnosis technology and using the tools such as Visual Basic, Photoshop, Microsoft Access, Psychodiagnosis Testing System for Equestrianism Players was developed. About 40 athletes who participated in the whole national equestrian championship game and the whole nation outstanding equestrian players game were divided three terms and measured successively. Results indicate that the testing system has higher reliability and validity than traditional mental test such as good effect, simple operation convenient inquiry and objective evaluation. It can rapidly diagnose and reflect psychological characteristics and mental state of equestrian players.

Keywords: *Equestrianism Players, Psychodiagnosis Testing System, Development*

1. Introduction

Equestrian sport is an event needing mutual coordination between athletes and horses. The most obvious difference from other events of equestrian sport lies in that the object handled by athletes is not the abiotic apparatus, but is horse having life (Wang, 2008). For the sensitive horses, the psychological changes of athletes in training and competition can directly affect horse performance; the horse behavior can affect athlete's on-site psychology conversely, which has big effect on the success in the competition. It can be seen that main body binary characteristic of equestrian sport event has decided the request for the athlete on psychological characteristics is comparatively high.

The equestrian sport is technical ability leading that shows some characteristic of kind difficult item group and accuracy item group concurrently. Luo Xiaobing, Wang Bin and Yu Lixian pointed out in the study, except having fine feeling consciousness ability, self-control, attention concentration ability and assignment, the athletes should has some psychological characteristics such as indomitable decisive will, intense wish to achieve goal and limpid target presentation reproduction ability(Luo et al, 2004).Qiu Fen, Wang Bin and Yu Lixian (2007)had verified that attention has the forecast to sports level of equestrian players and attention stability and consciousness level in the objective index has the forecast to sports achievement and have carried out analysis on the inconformity between psychological characteristics test result of athletes and the expert appraising. By adopting telemetering pulses instrument to monitor riders' heart rate in ordinary training competition, the research of Zhang Ling, Wang Bin and Yu Lixian (2007) discovered that the riders has beard heavy pressure in competition, this has been more obvious shown in the higher difficulty George subject and point out that the equestrian sport should change tradition method of heavy technology, light physical power training but to increase physical power training. Research of Li Xin, Wang Bin and Ma Hongyu (2007)indicated that equestrian players' speed feeling accuracy is affected by their sports level, the better sports level is the higher speed feeling accuracy is.

Making use of computer programming technology to develop an equestrian athlete's psychological characteristics test software can implement accurate and convenient measurement to the psychological characteristics of equestrian players, and it can discuss the relation between equestrian athlete's psychological characteristics and training and competition level. And we can carry out mental training and regulating and controlling combining with athlete's special technology level, which helps to improve training and competition achievements of our country's equestrian players, meanwhile, it provides intellectual support to the Beijing Olympic Games in 2008 and it is very necessary to ensure the performance of their sports level.

2. Methods

2.1. Tools

The study mainly used the Visual Basic programming means to develop Windows application program. Visual Basic is one of the simplest and direct tools based on the Windows operation system with good user interface and rich warehouse function, which makes the extensive procedure developers be able to make use of it to develop various functional application. We applied PhotoShop8.0 to carry out the image treatment and use Microsoft Access and Microsoft Excel to carry out the data memory.

2.2. Experts Evaluation

On the basis of looking up a great quantity document data and making an on-the-spot investigation on the competition, the author invited some experts of Chinese equestrian association and sports psychology field to evaluate the validity and rationality of the test indexes chosen by software.

3. Design and application of the Testing system

3.1. Selection to Psychological characteristics

Through interviewing with the equestrian sport and sports psychology experts and observational study on the equestrian training and competition scenes, we ascertain the equestrian players' psychological characteristics include:

(1) Feeling consciousness sensitiveness. The athletes should have accurate and sensitive consciousness to orientation judgment and sense of putting forth their muscle, speed consciousness and so on. Especially the specialized item sports consciousness, which is horse feeling. The riders need to have keen and accurate feeling consciousness to horse action, rhythm, the obedience and the mood of the horses.

(2) High attention concentration and endurance. Equestrian players, especially dressage athletes' artifice is complicated. It demands high attention to accomplish an action and the long completion time (above seven, eight minutes) requests higher attention concentration and endurance. Besides, the seat, the bridle and foot's help action and so on may be in progress at the same time and happen in different dimensionality, therefore, good attention assignment is also the important quality to the equestrian dressage athletes.

(3) Being good at adjusting own moods to ensure to have good mental state. The equestrian players need to ensure to carry out adjusting oneself to abnormal mental state arousing by the external conditional stimulus of in time and ensure the performance of skill level.

(4) Be of reasonable, calm, independent personality qualities, such as the stability, hard mind, independence and self-discipline.

(5) Good intelligence characteristics. It mainly shows that good operation ability, thinking ability and the ability to solve problems etc.

(6) Accurate memory ability. With the rising of the competition subject level, the difficulty of action and the route complexity is improving. The change of different action orders and different places' action and so on require the riders to have accurate memory of the action and the route.

On the basis of that, we have ascertained the contents to develop by the software:

(1) Consciousness measurement: Athlete's motion consciousness (including consciousness level, consciousness directionality, consciousness stability etc.).

(2) Attention measurement: contest state anxiety and personality anxiety measurement.

(3) Emotion measurement: contest state anxiety and personality anxiety measurement.

(4) Intelligence measurement: equestrian players' intelligence characteristic, operation and deduction ability and so on

(5) Neurotypes measurement: the characteristics of equestrian players' neurotypes, such as the intensity, irritability and flexibility and so on.

(6) Personality Assessment: the personality of equestrian players, such as introversion - extraversion, mental stability, spiritual quality. It can also test lies.

3.2. The selection of test indexes

3.2.1. Speed perception

The perceived level, perceived direction, perceived stability and the effects of exercise are measured by the time and space error of athletes' judgment to the movement of the ball speed and direction.

3.2.2. Comprehensive quality of attention

It's measured by an experiment named "digital maps" which means to find out the map that is displayed on the "1" to "100" number in accordance with the order they were identified. And the quicker, the better.

3.2.3. Attention breadth

In a very short period of time flashed on the screen were some randomly distributed balls, whose number was from 5 to 12. by the number of the balls can we judge the comprehensive quality of athletes' attention.

3.2.4. Attention stability

The ability to maintain sustained attention was determined by visual track.

3.2.5. State anxiety and trait anxiety

The 'STAI' (State-Trait Anxiety Inventory) have 20 items. Scoring higher means the level of anxiety is higher, and scoring lower means the level of anxiety is lower.

3.2.6. Intelligence

We used the "Raven (Raven, JC) standard reasoning test". The total number of the test's items is 60 and the test was divided into A, B, C, D, E five parts with 12 items per part. They were ranged from easy to hard. Exported scores were percentile and intelligence levels. Finally, with the reference of the Chinese norm which was established by Zhang houcan in 1985, we were able to give percentile and intellectual levels directly.

3.2.7. Neurotypes

We used the "80.8 nerve type test" to survey the characteristics of athletes' nerve type and brain functions. We used the second type of test procedure which meant that the first symbol of each line was considered as the positive symbol, and the remaining were negative symbols. Each line had its positive symbols.

3.2.8. Personality

"Eysenck Personality Inventory (EPQ test)" was used to survey the personality characteristics. It includes 85 items, four dimensions, named E (extraversion), P (psychoticism),

N (neuroticism) and L (Lie detector). We could calculate the original scores of each dimension, and also the proper fraction.

3.2.9. Selective reaction time

Different response was made to the red or green circle on the screen, press "S" button on your board when red circle appears and "L" button for green circle. The faster and higher the rate of correct is, the better.

3.3. The key technology

3.3.1. The distribution of digitals of “digital maps” in comprehensive attention quality survey

If we do the random distribution of digitals by Rnd () Randomize, there will be 100 factorial (100!) kind of arrangement in theory, and the location of this 100 digitals would be different in each access to the test. But different ways of digitals arrangement will lead to different difficulty of the tests. When several consecutive digitals were in the adjacent row, the testee will find them quickly, and when the digitals are scattered and disordered with no regulation, it will be much more difficult to find. In order to control the difficulty of testing, this study had taken the artificial sampling method. 100 pieces of paper in the same size were written on the 1-100 numbers and then were selected randomly. According to the drawn-out order, they were arranged by 10×10 and then made a "digital maps" with 100 digitals distributed randomly. Repeated it several times, and selected an appropriate one according to experts' evaluation of the 10 "digital maps". Finally, in accordance with this format has we produced "digital maps" on a computer. Such a test design ensured the appropriateness of difficulty and the consistency of each test.

3.3.2. The distribution of the two stimulations' appearance order in choice reaction time survey

By Rnd () function to make the two stimulations appear 40 times randomly, there will be 40 factorial (40!) kinds of arrangement in theory , and the difficulty of each test will be different. If the same stimulation appears many times continuously, the test will be like a simple choice reaction time test. We used the same way as making “digital maps” in comprehensive attention quality survey to solve this problem and chose two reasonable arrangement ways. Put the two schemes in the two arrays. In the form load, we used randomize sentence. That made each access to the two tests be randomly selected and the stimulations' appearance manner in accordance with the implementation of the scheme. This design guaranteed the randomness and suitability of stimulations' appearance, while reduced the potential effect of the practice at maximum after a trial at a number of measuring.

3.4. Test System instruction

After the successful installation, find the "equestrian players psychological test system" under the column "All Programs" in "Start" menu, double-click to start the software system. First entered a "loading" interface, and there are three buttons "new user registration", "subject loading" and "administrator loading" in the interface. New users click on the "new user registration" button to enter registration interface and input the basic information. Registered users click on "subject loading" button, enter your user name in the pop-up box and click "confirm" button and enter "the main interface." In the main interface, choose the test items for testing. Administrators click on the "administrator loading" on the right and enter a username and password, then "the project" and "the individual" buttons can be activated. All test results in the same testing will be summarized and displayed under the interface for the project; you can also directly import the results into Excel software to make it easy to do a more professional and detailed statistical analysis. Subjects' basic information and their testing results will be displayed after entering username. You can be printed out for feedback and analysis if necessary.

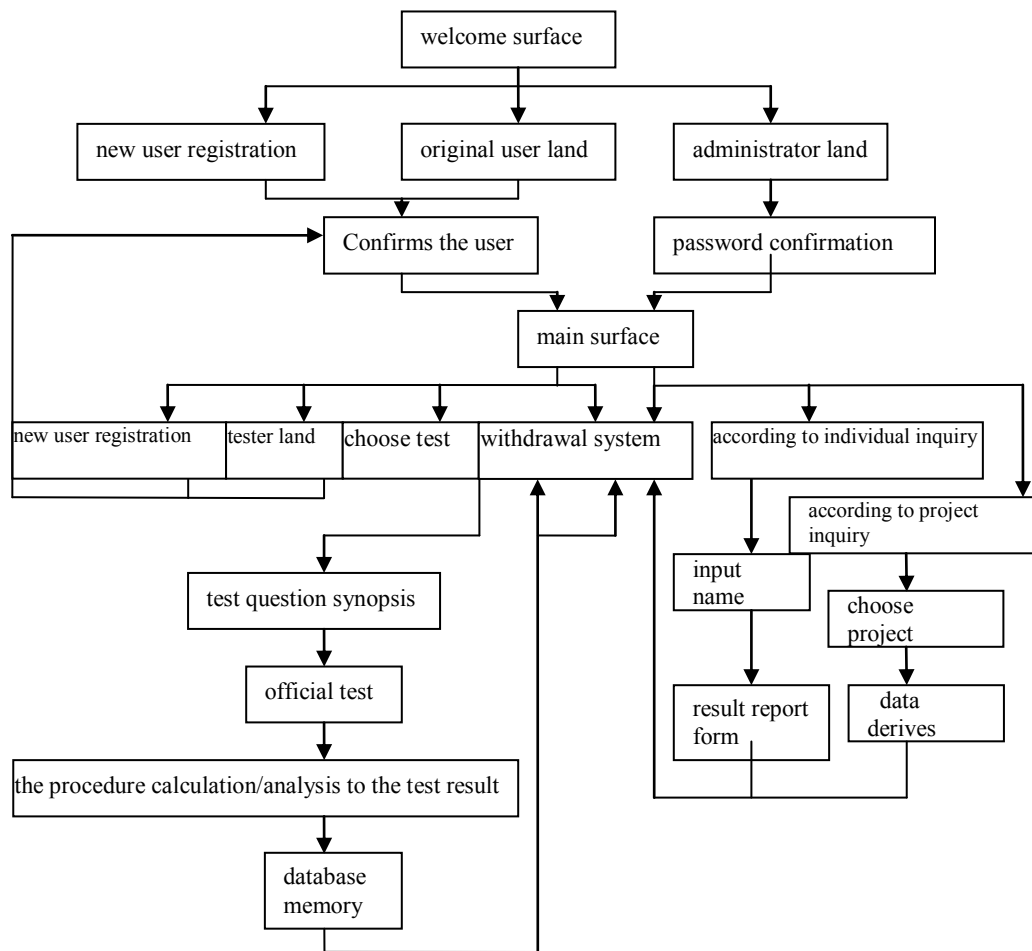


Table 1. The structure Framework for Testing System

4. The examination of reliability and validity

4.1. The reliability for testing system

All test item of this software was good follows the original test designer's design mentality and measures way. The personality test, the anxious test and so on, use the test of question and answer form, as a mature test table, the content and form don't make any changes in the software, will not influence its reliability, therefore in this research, the key research of reliability will place on the retest reliability examination, which as an operate class test changed a lot in the form. In the research, 10 persons were drawn at random, carried on the first tests, 2 hours to several days later, did the retest. (Table 1).

Table 1. The reliability retest of equestrian athlete psychology test system

	Speed perception	Space perception	Attention comprehensive quality	Attention breadth	Attention stability	RuiWen tests	Neurotypes	selective reaction
R	0.88	0.78	0.92	0.786	0.867	0.987	0.732	0.728
P	0.002**	0.021	0.002	0.036	0.021	0.001**	0.045	0.000

Note: R is retests the correlation coefficient, P is the significance examination of the retests correlation coefficient.

As shown in Table 1, each test index's relativity are more than remarkable level, which demonstrated that the test system can satisfy the test the reliability request.

4.2. The validity for testing System

The entire test system's development and the design, is carried on standard and strictly, defer to the standardization, the objectification, the reliability and the validity. And has done actual tests many times in various provinces equestrian team, has made the repeated adjustment under expert's instruction to the detail, causes it tends to be perfect unceasingly. The participation of the experts has guaranteed the system's validity. If examines test system's validity through the expert judgment, it will face the following question: On the one hand , this research test content are many, each test also has several targets, it is impossible for the expert to aim at these evaluation targets to judge one by one. On the other hand, the quantity of experts is limited, the understanding degree to the athletes is inconsistent and so on, and these subjective and objective reasons instead will possibly affect the fair and objective of the effect sign. Therefore, this research gave up choosing to carry on the expert judgment strictly. But requests the expert to appraise the test indexes, the validity and the range of validity, the result these tests obtained their approval.

5. Conclusion

The equestrian athlete psychology test system is a testing software, which aims at all kinds of psychological features that the athlete needs in the equestrian sports, the examination indicated that this test system has achieved the anticipated function, it has the high reliability and the validity, it is a set of standard and objective test system. Through computational procedure in the software and the effective establishment, it can reflect the survey result rapidly and directly. Uniting the reality of sports and training, utilizing nimbly, it can make a rapid and reasonable judgment for the equestrian athlete's psychological feature and the psychology condition, it can provide the support for the equestrian athlete's training and the competition work.

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