Cloud Platform Data Analysis and Physical Activity Characteristics Impact on Mental Health in Morning Exercise Crowd

Dong Guo, Ning Ma*
Shangqiu Normal University, Shangqiu 476000, China

*Corresponding author(Ning Ma, E-mail: m_n1980@126.com)

Abstract
Cloud computing technology provides new technical support for data analysis. This paper analyzes the cloud platform data analysis and physical activity characteristics impact on mental health. In order to find out the influence of different sports activities on the mental health, this study uses occasional sampling method to investigate the mental health status of different morning exercise groups. The results showed that: exercise time in different forms, motion frequency, sweating amount after exercise and duration of morning exercises have significant influence on psychological health. Therefore, the government should pay attention to the crowd physical exercise and physical health, strengthen the guidance and propaganda of the three-dimensional health concept, and promote their own harmonious development.

Key words: Cloud platform, Data mining, Mental health

1. INTRODUCTION
The biggest advantage of cloud computing is the integration of resources, can contribute to the coexistence of heterogeneous educational resources, and without the need to change the existing data platform to maximize the integration of resources. Calculation of the mental health education of high quality resources are integrated into the "cloud" with the cloud, can share each other's resources to build and realize each in his element. The psychological health education resources in the "cloud" is the national quality resources have the opportunity set, which consists of two parts: one is the base class "cloud", an online compulsory classroom, students can choose the teacher and learning progress, through interaction with psychological teaching, master basic knowledge and theory of mental health; two is the seminar "students need to choose cloud", the mental health of special knowledge and theory according to the needs, grasp the depth of a certain aspect of psychological adjustment skills. Teachers can recommend learning content according to the students' information. These resources "cloud", for either schools or teachers and students, the use of equipment requirements are the lowest, as long as the terminal equipment can have access to the Internet, the user can at any time and place, with their own habits in the form of access to and use of cloud resources.

In the fifth Plenary Session of the 18th CPC Central Committee, the construction of "healthy China" has risen to be a national strategy. People realize the importance of health and pay more and more attention to their health. However, according to statistics by the WHO and China's Ministry of health, the number of people with psychological problems in China is between 200 million and 300 million. Chinese Academy of Sciences Institute of psychology published the "2007 National Mental Health Research Report" shows: nearly 20% of Chinese urban residents in the mental health problems. In April 7, 2017, the national health and Family Planning Commission held a news conference: with the aging of the population in China, the prevalence of senile dementia showed an upward trend, and the prevalence rate of senile dementia in people aged 65 and above was 5.56%. People's mental health is worrying. Physical exercise has the function of promoting mental health, has long been recognized, but what kind of intensity of exercise for different exercise time people's mental health can play a positive role, or still need to discuss the problem. The purpose of this study is to seek the characteristics of different sports activities of morning exercises groups of mental health, mental health movement so as to find out the most suitable morning people, has important significance for the construction of "building a harmonious society Chinese health".

2. DATA MINING AND CLOUD PLATFORM
2.1. Data mining
With the rapid development of computer and information era, the ability of people to data collection, storage and access is greatly improved, the rapid growth of massive data has far exceeded people's understanding of traditional data analysis tools appear. How to organize the data effectively, find valuable knowledge, so as to help people make the right decision, data mining technology; data mining is a kind of intelligent data at the end of the last century the rise of the analysis technology, also known as knowledge discovery in database, it can extract the useful knowledge from the data base, data warehouse, or other storage in the library or extraction. The system of College Students' psychological files, the data source mainly includes
the basic information of students, the main social relations and individual psychological characteristics, the psychological characteristics of personality psychology generally use the measurement scales questionnaire survey. Data mining is an important part of data reprocessing, data acquisition of the source of the cleaning process and refining, extraction of high quality data sets and then data mining. From the data itself to consider, data mining usually need to have data information collection, data integration, data reduction, data cleaning, data transformation, data mining 8 steps of implementation process, pattern evaluation and knowledge representation. It can be divided into three stages: data preparation, data mining and knowledge representation.

2.2. Application of cloud computing in mental health education

Cloud computing is a new network application technology, it is the grid computing distributed computing, parallel computing, utility computing, network storage, virtualization, load balancing and other traditional combination of computer technology and network technology, it is a relatively low cost computing entities into a super computing and integration resources and environment through the network, a large number of computing resources connected with the network for unified management and scheduling, constitute a pool of computing resources, and with the help of infrastructure services (IaaS), service platform (PaaS), software services (SaaS) and other advanced services to provide users with on-demand service, and build a variety of comprehensive to achieve national or even global resources sharing. Cloud computing can make the Internet users in different places of the computer together, logically as a supercomputer, which combines all the resources and information island, visits and support the completion of dynamic and heterogeneous resources in a large range, it is educational resources construction and sharing provides a new means of network.

One of the most important characteristics of cloud computing is that it can easily achieve collaborative work or cooperative learning. Cloud computing is not a simple system of the computer network, but a sea of clouds of computer resources integration, the user can at any time and place to visit and used their own form of love or the use of a variety of “cloud” resources. No matter when and where the user access, as long as access to the cloud, you can use the same working environment. These characteristics of cloud computing make it possible to schedule a large number of computers, applications, information resources and so on. It can realize the independent or cooperative learning.

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**Figure 1. Cloud computing**

**Figure 2. Cloud computing platform**
3. RESEARCH METHOD

In order to discuss the differences between different morning exercises groups in terms of mental health, this study used random sampling method, the method of personnel interviews, sampling on 20 morning point morning personnel investigation, the survey involved in different forms of exercise, exercise, movement time, exercise frequency, exercise after sweating, continued the sports life of male and female individuals, issue 1000 questionnaires, 867 questionnaires were collected, screened 759 effective questionnaires. The survey data obtained by SPSS software to analyze and calculate the mean and standard deviation (SD), two samples were compared using one sample T test and independent sample T test, ANOVA using Levene test, multiple comparison and 22 compared with single factor analysis of variance. The statistical results are checked and analyzed by professionals and applied to the analysis and discussion of this research work.

4. RESULTS AND ANALYSIS

4.1 Comparison of mental health factors among morning exercise groups with different exercise styles

Through the single factor variance of different forms of exercise exercise mental health factors of population analysis can be seen: (1) different forms of exercise in the morning exercises groups except psychotic factors have no significant difference (P > 0.05), in a hostile, terror factor has very significant difference (P < 0.01), there was significant difference in the anxiety factor (P < 0.05), somatization, compulsion, interpersonal relationship, depression and paranoid factors has very significant difference (P < 0.001); (2) different forms of exercise exercise there is very significant difference in the population of the total symptom index (P < 0.001), the mean value from each point of view the total symptom index, from high to low is: together with the family group, individual group, participate in counseling Station Group, and friends. (3) from the comparison of each group, there was a significant difference between the other groups in the SCL90 scale (P < 0.05).

![Figure 3. Comparison of mental health factors among morning exercise groups with different exercise styles](image)

4.2 Comparison of mental health factors among morning exercise group with different intensity

From the single factor variance of mental health factors of morning exercises groups different exercise intensity analysis of the projects can be seen: (1) the factor from the SCL90 scale, between the different intensity of physical exercise in the crowd phobia have significant difference (P < 0.05), but there are no significant differences in other factors (P > 0.05), indicating differences in the level of mental health in these factors on the 4 different exercise project groups are not significant; (2) from the total symptom index mean of each group, the symptom index from high to low is: mild exercise group and small intensity is not too nervous exercise group, moderate intensity exercise group, more intense persistent shortness of breath sweating a lot of great intensity but not lasting exercise group. (3) from the mean value of each factor, except the terrorist factor mean mild exercise group, moderate intensity group, high intensity exercise group not lasting slightly higher than the national norm, other means were lower than the national norm, indicating better mental health status in these factors, the morning exercises groups than that of national norm; the strength is not small too strenuous exercise group except paranoid ideation and hostility factor mean slightly higher than the other groups, other factors mean lower than the other groups.
4.3 comparisons of mental health factors among morning exercise crowd in different exercise time

After investigation, each exercise time is less than 10 minutes, the number of morning exercises is 0, so no longer discuss. Through the single factor variance of mental health factors of different exercise time exercise crowd analysis can be seen: (1) between different exercise time in the morning exercises groups 9 mental health factors of SCL90 scale and there is an obvious difference (P < 0.001); (2) different exercise time morning exercises groups had an extremely significant difference in total. Index (P < 0.001), the mean value from each group, the symptom index from high to low is: 31-59 minutes, 21-30 minutes, group group group, 11-20 minutes more than 60 minutes, but each average value is lower than the national norm, so daily exercise time should be more than 60 minutes for the development of mental health good. (3) comparison groups respectively from the situation, the 9 factors of mental health 11-20 minutes 31-59 minutes in SCL90 group and the group scale showed significant differences (P < 0.05), and among the other groups there were significant differences in some factors (P < 0.05); 9 mental health factors 21-30 minute group and more than 60 minutes in group SCL90 scale showed significant differences (P < 0.05), and among the other groups there were significant differences in some factors (P < 0.05); 9 mental health factors of 31-59 group and 11-20 group, minutes minutes more than 60 minutes in group SCL90 scale were there were significant differences (P < 0.05), and among the other groups there were significant differences in some factors (P < 0.05).

4.4 Comparison of mental health factors among morning exercise crowd with different exercise frequency

According to the survey, the number of people who work 1 times per month and the number of morning exercises is 0, so it is no longer discussed. From the single factor variance of mental health factors of different frequency analysis can be seen: morning exercises groups (1) between different exercise frequency in morning exercises groups 9 mental health factors of SCL90 scale and there is an obvious difference (P < 0.001); (2) the different motion frequency of morning and there is an obvious difference in the total population the symptom index (P < 0.001), the mean value from each group, the symptom index from high to low is: 1-2 times a week group, 2-3 times a month group, 3-5 times a week, 1 times a day, which was 1-2 times a week in average value is far higher than the national norm, so the number of exercises should be 1 times a day is appropriate; (3) comparison respectively from each situation, 1-2 times a week and every week 3-5 group, 1 times a day group there were significant differences in 9 factors of psychological health on the scale of SCL90 (P < 0.05), and other Between the groups were significant differences on some factors (P < 0.05); 3-5 times a week and every week 1-2 group there were significant differences in 9 factors of psychological health on the scale of SCL90 (P
< 0.05), and among the other groups there were significant differences in some factors (P < 0.05); 1 times a day and every week 1-2 group there were significant differences in 9 factors of psychological health on the scale of SCL90 (P < 0.05), and among the other groups there were significant differences in some factors (P < 0.05).

**Figure 6.** Comparison of mental health factors among morning exercise crowd with different exercise frequency

### 4.5 compare the mental health factors of morning exercise crowd after sweating

Through the single factor analysis of variance of mental health factors of people sweating exercise after different exercise shows that: (1) after exercise sweating exercise between different populations in 9 mental health factors of SCL90 scale and there is an obvious difference (P < 0.001); (2) after different exercise sweating exercise group extremely significant difference in the total symptom index (P < 0.001), the total symptom index mean of each group, from high to low in turn is: no sense group, medium group, sweating body slightly fever group, sweating group, sweating slightly, each symptom index mean value is lower than the national norm which slightly; the total symptom index sweating exercise group mean lower than the other groups. (3) comparison respectively from each situation, body slightly fever and sweating slightly group there were significant differences in each factor (P < 0.05), and among the other groups there were significant differences in some factors (P < 0.05); sweating slightly group and body slightly fever group, moderate sweating in the group the psychological health factors, there were significant differences (P < 0.05), and among the other groups there were significant differences in some factors (P < 0.05); the somatization factor is sweating slightly better than the other group group, explained that the movement intensity is more suitable to the morning exercise sweating slightly.

**Figure 7.** Comparison of mental health factors of morning exercise crowd after sweating after different exercises

### 4.6. Comparison of mental health factors among people with different duration of morning exercises

Through the single factor variance of mental health factors in different age groups for morning exercise analysis can be seen: (1) between different age groups in the 9 morning exercises for a psychological factor of SCL90 scale and there is an obvious difference (P < 0.001); (2) the different duration exercise period exercise groups has very significant difference the total symptom index (P < 0.001), the mean value from each group, the symptom index from high to low is: less than half a year, half year group, 1-3 group, 3-5 years group, more than 5 years group, 3-5 years group; the overall situation of 3-5 group and the group of above 5 years of mental health is
better than other groups that persist for a long time exercise has a positive impact on the enhancement of people's psychological health; (3) comparison respectively from each situation, 9 mental health group and the 3-5 group is less than half a year in SCL90 scale Factors were significant difference (P < 0.05), and the other groups there were significant differences in some factors (P < 0.05); the first half of the -1 years group and 1-3 years group, 3-5 years group, there were significant differences in each factor (P < 0.05), and other groups have significant differences in some factors (P < 0.05). Among them, somatization factor gradually decreases with the increase of the number of morning exercises, which shows that it is important to adhere to the year-round exercise for enhancing people's physical fitness.

Figure 8. Comparison of mental health factors among people with different duration of morning exercises

5. DISCUSS

The results showed that the intensity of strenuous exercise for more than 60 minutes a day was not enough, and exercise had a positive effect on mental health.

The interview, together with the family group, the symptom index highest is mainly because of the morning due to the skill of different understanding, interpersonal communication, morning exercises in the morning exercise as a continuation of the family dispute caused by some factors such as place of family conflicts which affect the status of mental health. And exercise with friends more enjoyable, and has a positive effect on their mental health. The intensity of mental health in the exercise group was better than that in the other group, and it reflected the small intensity and not too tense. Exercise was more suitable for morning exercises than other items. In addition, from the perspective of human physiology, people usually get up in the morning shortly after a variety of sports, while the various functions of the human body status has not yet entered the best condition, if the direct moderate intensity and high intensity exercise will produce certain adverse effects on the human body, so the morning from range, simple action, let the body there is a gradual process of adaptation, so as to avoid damage, about 5-10 minutes later, and then gradually increase the range of motion, action also slowly from easy to difficult. Therefore, the development of a variety of small intensity, less intense exercise for morning exercises is also in line with the physiological characteristics of the human body.

The general psychological health level of the sweating group was better than that of the other groups, and the exercise intensity of slight sweating in morning exercises had a positive effect on mental health. This is more in line with people's daily habits, most chenlianzhe reflect, in the morning after they also carry out various daily activities such as eating, school, work, shopping and so on, if a large number of sweat after exercise to bath, change clothes, will cause some inconvenience, delay time. On the other hand, from the point of view of the body's own function, the human physiological structure is different, sweat gland are not the same. The amount of perspiration directly affects human health. Excessive sweating can cause less blood flow in the body's blood circulation, slowing the circulation and reducing the amount of heat in the body, leading to an increase in body temperature. A large amount of perspiration can also cause loss of salt in the body, causing heat cramps in the cells due to sodium deficiency, which can be detrimental to health. Especially in the summer, because the sweat volume, if excessive exercise, not only the loss of water in the fast, important elements of K will quickly drain, a serious lack of potassium will lead to excessive shock or coma, serious words and even death. And slightly sweating after exercise, a good level of mental health, and this is consistent with the previous small intensity, less stressful morning exercises, mental health level good conclusion. Therefore, the intensity of morning exercises should be slightly perspiration appropriate.

The questionnaire involves many affected personnel exercise levels and cultural factors such as age, although the issue questionnaires in the process made a lot of effort, but some old morning exercises can only be investigated in the form of interviews, which will give the research results have a certain deviation. Due to differences in cultural background, living environment, factors affecting the mental health of morning exercises
groups are not the same, some factors of mental health of people exercise index and its effect is not included in this study, this investigation involved in sociology, human physiology is not considered to be improved in the further research.

6. CONCLUSIONS AND RECOMMENDATIONS

(1) Insist on daily exercise for more than 60 minutes a day, the intensity is not too tight, exercise has a positive impact on mental health.

(2) The different forms of exercise exercise time, exercise frequency, exercise after sweating and continuous exercise age factors on the mental health effects of morning exercises groups significantly between the groups in the factors and the symptom index in different degrees of difference. There are no significant differences in the other factors except for the difference of the terror factors between the groups with different intensities and the groups of morning exercises. Among them, the small intensity less intense exercise group, daily morning exercise 1 times, every morning exercise more than 60 minutes, group, after exercise slightly sweating group, psychological health level is better than other groups.

(3) The government departments at all levels should give full attention to exercise people physical exercise and physical and mental health problems, pay attention to the people to set up to the physical, psychological and social adaptation of the three-dimensional concept of health publicity and guidance ability as the core, to self adjustment, work ability, release negative emotions, increase community sports funding, construction people exercise and improve sports facilities, enhance the strength of community sports instructors, raise awareness of exercise psychology, build a positive exercise habits, coordinate the relationship between life and work, exercise, reasonable arrangement of physical exercise time and intensity, regularly participate in appropriate, suitable and interested in physical exercise activities promote the harmonious development.

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