Analysis of the Effect of Golfers' Psychological Autonomous Regulation Ability on Their Performances

Ying Jin

Bu Qing Learning community Wenzhou University, Wenzhou, 325000, China

Abstract: Golf is a gentleman's outdoor sport. The paper aims to analyze the influence of athletes' psychological autonomous regulation ability on their performance under the stroke play mode in golf competition. By measuring and calculating the related variables and performance of athletes of different ages, sexes, levels and the same athlete under different states, the data measured are analyzed and compared. Then the relationship between the ability of psychological regulation and the performance of golf athletes is obtained. Through a series of analysis, it is concluded that athletes with strong psychological regulation ability can control their performance better, which makes athletes pay more attention to their psychological health while practicing their own sports skills.

Keywords: Psychological regulation; Athletes' performances; Regulation ability

1. Introduction

Golf is the process that an individual or team players hit a ball into a specified hole with different golf clubs. The reason why Golf is called as a gentleman sport is that there many manners in golf matches that are not found in other sports. Honesty, self-discipline and consideration for others at any time are the spirit of golf and the essence of golf [1]. Professional practice of golf is not only to train physical fitness, but also requires high psychological quality. Therefore, golf practice helps to improve people's psychological quality and cultivate patience. In the process of golf training and competition, athletes have to take certain pressure. Appropriate pressure can make athletes produce a benign hyperactivity, but excessive pressure that athletes themselves cannot adjust for a long time, will lead to mental health problems. The World Golf king once said, "80% of playing golf successfully depends on mentality and 20% on physical ability". Another excellent golfer once said, "When you swing, you have to get rid of all distractions." Successful golfers tell us from experience that mentality is often more important than physical skills on the court. Golf competition requires athletes to maintain a good and stable psychological quality at any time. A misjudgment or a pole misplay in the course of competition may induce athletes to produce bad psychology. In the short term, the state and mood of athletes without strong autonomous psychological regulation ability will be affected during competition, and indirectly the performance of the competition will be affected.

2. Measurement of Autonomous Psychological Regulation Ability

2.1. Common unhealthy psychological states

In the competition, it is unavoidable that the multiple pressures from all sides lead to the occurrence of unhealthy psychological states, which includes fear of competition, loss of calm, lack of control, anxiety about choosing clubs, worry about the ball and nervousness about the first serve. These psychological states require athletes to have strong psychological quality to make self regulation. In the early stage of the competition, athletes will have a prediction of the results of the competition. When the expectation of the results is too high, the anxiety level will exceed the standard stress indicators in the competition. Athletes in this state will be unable to concentrate in the competition. If this kind of psychology cannot be combed and regulated in a short time, it will leads to physiological problems, such as reduced coordination of body muscles, leading to deviations in the direction of swing and then affecting the final results of the game [2]. In addition to the worries about the whole competition process and results before the competition, there will be changes in the competition process due to weather, climate and other factors, which tests the athletes' stress response. For example, if the players are unable to deal with this psychology in time, they cannot make the right decision in the following competition, which will affect the result of the whole competition. A match takes about 4-5 hours. It requires athletes to have good patience, perseverance as well as their physical strength. In the latter

HK.NCCP

International Journal of Intelligent Information and Management Science
ISSN: 2307-0692, Volume 7, Issue 6, December, 2018

part of the game, the excitement of the players is reduced, and their control of skills is also reduced, so that they will fall into the solidification of thinking before swing, and cannot be decisive when hitting the ball, which will affect the efficiency of the game. There is also the effect of the first serve. Under the psychological pressure, the failure rate of the first serve is 5% - 10% higher than that of other holes. The failure rate of the first player is also higher than that of other players. Psychological preparation and pre-match warm-up time are shorter than other stages of players, the first ball players have to bear more psychological pressure which makes them to have higher regulation ability.

2.2. Measurement subjects

The subjects are measured according to the ages, sexes and levels of the athletes, so as to facilitate statistical analysis. Because the number of golfers is relatively small compared with other sports, sampling survey can be used to measure statistics. Select all athletes in one competition in a certain area as representatives, label them in order, classifying them according to their age, sex and sports level, and count the relevant variables of athletes' psychological autonomous regulation ability separately. It is also necessary to make statistics on the relevant variables of the same athlete in different competitions.

2.3. Measurement variables

The measurement of athletes' ability of psychological self-regulation only can be obtained by measuring the relevant concrete variables. Relevant variables can be classified into three major aspects: mental support, psychological pressure and coping efficacy. Spiritual support is the reason why athletes choose Golf and participate in golf competitions. It plays an active role in psychological regulation [3]. Psychological pressure can be divided into the pressure of being responsible for the match, the audience, the referee and the coach, as well as the pressure brought about by the injury of one's own body. The existence of pressure has a certain impact on the athletes' psychological, physiological, digestive and even endocrine systems. Appropriate pressure can make athletes have a benign state of excitement, and is also a normal physiological state. When the pressure from all sides is too high, athletes need to have certain regulation ability, which involves another variable parameter: coping efficacy. Coping efficacy refers to the ability to adjust, adapt, solve problems and face challenges. This ability is influenced by congenital heredity, personality characteristics, educational experience and other elements. Everyone has a certain coping ability, and coping efficacy can also be changed through the athletes' acquired experience. Coping efficacy is measured by the ability to cope with problems and stop unpleasant feelings and thoughts.

2.4. Measurement results

The measurement can be carried out after determining the subjects and variables, and the measurement results as shown in Table 1 can be obtained.

Table 1. Measurement of Psychological Autonomous Regulation Ability

	No.1	No.2	No.3	No.4
Gender	Male	Female	Male	Female
Age	43	24	29	36
Level	First class athlete	First class athlete	Second class athlete	Second class athlete
Mental support	84.49	83.31	81.25	69.72
Pressure from the match	3.96	3.69	3.58	3.74
Pressure from the audience	1.23	1.26	1.19	1.31
Pressure from the referee	2.17	2.31	2.44	2.07
Pressure from the couch	2.53	2.56	2.44	2.73
Pressure from own body	2.87	2.64	2.59	2.79
Coping efficacy	20.66	18.65	16.63	14.26
Game rules	Stroke play	Stroke play	Match play	Match play
Service distance	315	310	309	302

Due to objective factors, there is an error of (+0.05) in the measurement results.

3. Calculation of Golf Performance

3.1. Rules of the game

Different from other sports, in addition to the evaluation of goals, golf competitions will consider manners. If players do not observe golf manners, they will be banned directly. Golf competitions can be divided into two categories in terms of competition form: stroke play and match play, and professional and amateur competitions in terms of horizontal classification. In stroke play, the number of strokes in each hole is accumulated. After playing a game, the total number of strokes is added up, and used to determine the score of the player. The fewer the strokes are, the higher the score will be. The match play is based on the number of strokes, but the difference is that the number of strokes per hole determines the suc-

HK.NCCP

International Journal of Intelligent Information and Management Science
ISSN: 2307-0692, Volume 7, Issue 6, December, 2018

cess or failure of the hole, and the number of winning or losing holes determines the result of each match. The bigger number of holes means the higher the result [4].

3.2. Dealing with the data

For the calculation of golf performance, the same method should be adopted to deal with the results of games belonging to same category. The results are calculated using the results of professional competitions. Since golf is a gentleman's sport, high-level athletes should give low-level athletes Handicap, thus Handicap of each player is calculated. Therefore there are three steps in calculating the result of the competition. Firstly, calculate the Handicap of the competition with Formula 1.

$$C = \frac{\sum_{i=0}^{5}(R_1 + R_2 + R_3 + R_4 + R_5)}{5} - R \qquad (1)$$

Formula 2 is used to calculate the total number.

$$Q = \sum_{i=0}^{n} R_i \times 1.5 \qquad (2)$$

Finally, the net pole is calculated by formula 3, which is the final result.

$$S = Q - C \qquad (3)$$

Through three formulas, the final results of athletes are calculated. In the formulas, C is the Handicap, R is the standard pole, R1 is the first round result, and so on. i is the number of rounds, n is the total number of rounds, Q is the total number, and S is the net pole. In addition, the results of the competition are also affected by the accuracy and the distance of the players' serve. It can be analyzed from experience that the higher the accuracy of the serve is, the better the resulted will be. And the farther the serve distance leads to much difficulty in controlling the performance, which makes the lower score. This data is divided into two parts for statistics: the results of different athletes in the same match and the results of one athlete in different competitions. All data is processed using SPSS ver 10.0 on the computer for statistical analysis to facilitate the correlation between the ability of psychological self-regulation and the performance of golf athletes [5].

3.3. Calculation results

Using the above data calculation method to calculate the scores of different athletes in the same competition, whose ability of psychological self-regulation have been measured, the result is shown in the following table.

Table 2. Scores of Different Athletes in the Same Competition

Number	Results					Total Score	Average Score
	Round 1	*Round 2*	*Round 3*	*Round 4*	*Round 5*		
1	88	89	88	91	90	446	89.2
2	87	87	85	83	88	430	86
3	84	86	87	83	88	428	85.6
4	85	81	82	84	86	418	83.6

Then, an athlete's competition scores are counted and analyzed. The results are shown in the table below.

Table 3. Scores of One Athlete in Different Competition

Time	Scores					Total Score	Average Score
	Round 1	*Round 2*	*Round 3*	*Round 4*	*Round 5*		
4.22	81	84	82	86	80	413	82.6
5.13	87	86	82	84	85	424	84.8
5.29	84	83	85	83	88	423	84.6
6.08	88	89	88	91	90	446	89.2
6.19	89	88	90	92	89	448	89.6

Scores are taken as integers, and the average score remains one decimal point behind.

4. Analysis of the Results

In order to further observe the correlation between the ability of psychological regulation and the performance of different athletes, the stepwise multiple regression analysis method is adopted with the performance as dependent variable and the dimension factor of psychological regulation as predictive variable [6]. For professional athletes, there are two significant variables entering the regression equation. The multivariate correlation coeffi-

cient is 0.426, and the joint interpretation variance is 0.438. The regression equation is: competition score = 0.301 * coping effectiveness + 0.279 * mental support - 0.211 * psychological pressure. The data in Tables 1 and 2 can be used to analyze the influence of psychological regulation ability on the performance of athletes of different ages, sexes and levels.

4.1. Effect of psychological regulation ability on performance fluctuation of athletes of different ages

HK.NCCP

International Journal of Intelligent Information and Management Science
ISSN: 2307-0692, Volume 7, Issue 6, December, 2018

From Table 1, it can be seen that the older the athletes of the same gender on similarity level, the stronger the mental support, the less the pressure, and the higher the cop-ing efficacy will be. The comparison curve is as shown in Figure 1 corresponding to the performances in Table 2.
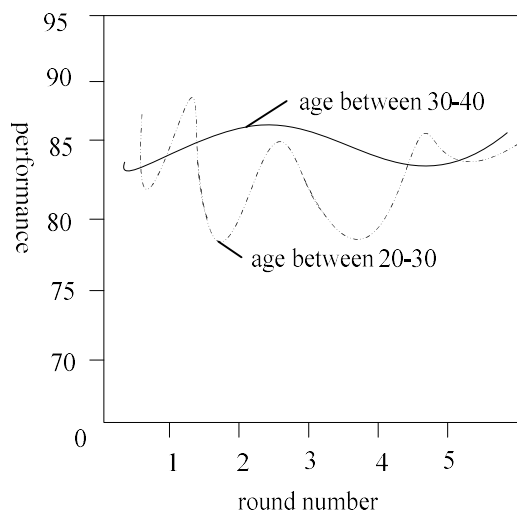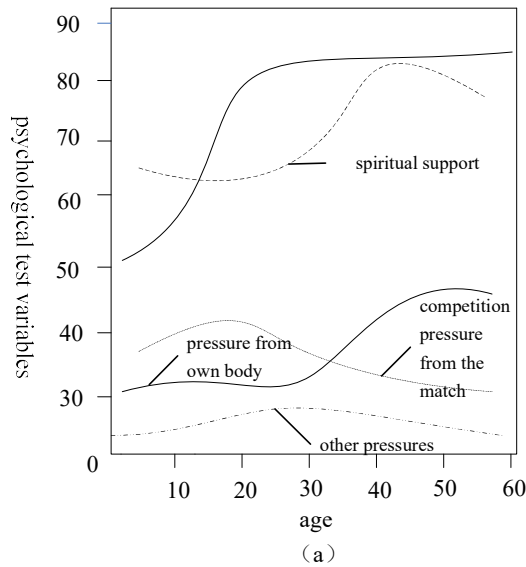

(a)

(b)

Figure 1. Relevant curve of age, psychological regulation ability and performance

Through the curve (a), it can be seen that under other fixed conditions, with the increase of age, the pressure from one's own body will gradually increase, the pressure from other aspects will gradually decrease, and the ability of self-regulation will be enhanced. It can be seen intuitively from curve (b) that the performances of older people are more stable than those of younger people, and can give full play to their own level. It can be concluded that the older age and the stronger psychological regula-tion ability lead to more stable fluctuation o f performances.

4.2. Effect of psychological regulation ability on performance fluctuation of athletes of different gender

Analyze the self-regulation ability of athletes of the same age and different sexes. Athletes 1 and 3 are males and athletes 2 and 4 are females. From the table, it can be concluded that under the same conditions, males have better ability to control emotions and regulate pressure than that of females. The specific variable analysis is shown in Figure 2 (a).
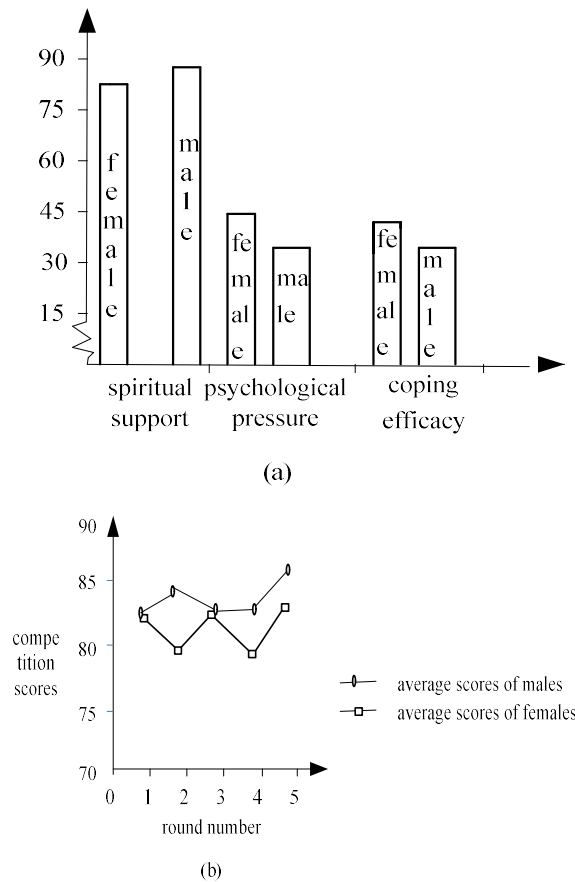
HK.NCCP

International Journal of Intelligent Information and Management Science
ISSN: 2307-0692, Volume 7, Issue 6, December, 2018

(a)

(b)

Figure 2. The correlation curve of gender, psychological regulation ability and Performance

In Figure 2, the curve (b) is a comparison curve of the average scores of males and females in each of the five rounds. From the curve, it can be seen that there is little difference between the average scores of males and females in each round. Professional golfers can better control their normal performance in each competition. But because the psychological regulation ability of males is slightly stronger than that of females, the scores of males is slightly higher than that of females in a normal situation. It can be concluded that male golfers have a slightly stronger ability of psychological self-regulation than female golfers, and their average performance is slightly higher than that of female golfers.

4.3. Effect of psychological regulation ability on performance fluctuation of athletes of different levels

Golf players are divided into professional athletes and amateurs. Because of the statistics used in this paper are the results of a professional golf tournament, the information collected are the performances of professional athletes. Professional athletes are divided into first-class athletes and second-class athletes according to their dif-

ferent levels. The level of first-class athletes is stronger than that of second-class athletes [7]. According to the measurement data of psychological Regulation ability in Table 1, it can be seen that the first-class athletes are more interested in and knowledgeable about golf and have longer training process, so their spiritual support is stronger than that of the second-class athletes. In terms of psychological pressure, more experienced athletes can easily transform the pressure brought by external factors such as coaches, referees and spectators into motivation, thus having stronger coping efficacy. Besides, because of long-term training, they also have a certain confidence in their own physical quality. By comprehensive variable analysis, it can be concluded that the ability of psychological self-regulation of first-class athletes is better than that of second-class athletes. By calculating the results in Table 2, it can be seen that the average performance of the first-class athletes is higher than that of the second-class athletes under the condition of the same sex and similar age. In summary, the following conclusion can be drawn out: the higher the level of athletes, the stronger the ability of psychological self-regulation and the better the performance will be.

HK.NCCP

International Journal of Intelligent Information and Management Science
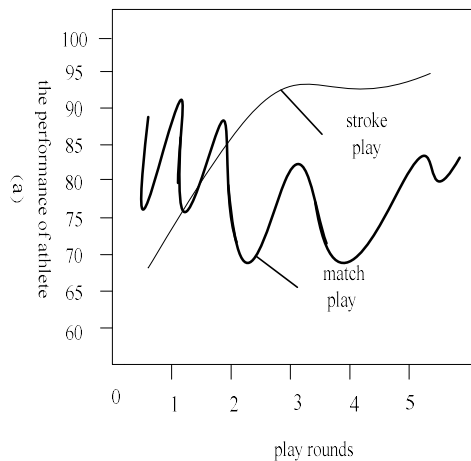*ISSN: 2307-0692, Volume 7, Issue 6, December, 2018*

4.4. The effect of psychological ability on the performance of the same athlete at different stages

From the analysis of psychological state and the calculation of performance, the influence of psychological regulation ability on the performance of the same athlete at different stages can be obtained. Because the same athlete's psychological states are different at different stages, the psychological pressure they face will be different, and so is their ability of psychological regulation [8]. According to the statistical results of the above data, the same professional athlete participates in many competitions every month. Golf competitions are divided into off-season and peak season. In summer and winter, the temperature is too high or too low which is not suitable for golf, making the two seasons be the off-season of golf competitions. Temperatures in spring and autumn are stable and relatively mild, which is suitable for golf and golf competitions. In the first few matches in spring and autumn, because athletes have not carried out sports training for a long time, there is a psychological state of inadequate confidence in their own skills. Therefore, in the first few matches of each stage, the athletes are not so skilled in the competition, the pressure from their own body increases, and the ability of psychological regulation becomes weaker. According to the statistics of the same athlete's performance every year, the results of the first few matches in the same stage are slightly lower than the average results of the same year. Therefore, it can be concluded that the same athlete has different psychological regulation abilities in different stages, and his or her performance of the competition is also uncertain.

4.5. The effect of psychological regulation on the competition results of the same athlete under different rules

According to the rules of competition, golf competitions can be divided into two forms: stroke play and match play. Different forms of competition use different venues. Competing in a more familiar environment can enhance the players' psychological safety awareness, and the ability of psychological regulation will be more stable. Golf clubs are also different in different competition systems. Each fairway has its own characteristics. The distance and difficulty of each hole are different, and the width of the fairway is different. It can be said that choosing a suitable club is the first and the most critical step to win the game [9]. Athletes can play more normally in the more familiar environment and competition system, because being familiar with the venue can enable then to select the most appropriate club. In order to get exact conclusions and avoid the influence of randomness on the results, two representative athletes are selected for analysis. Athlete (a) takes part in more match plays than stroke plays and is more skilled in the rules and techniques of match play. Athlete (b) has the same proficiency of the two competition systems, and the specific results are shown in Figure 3.
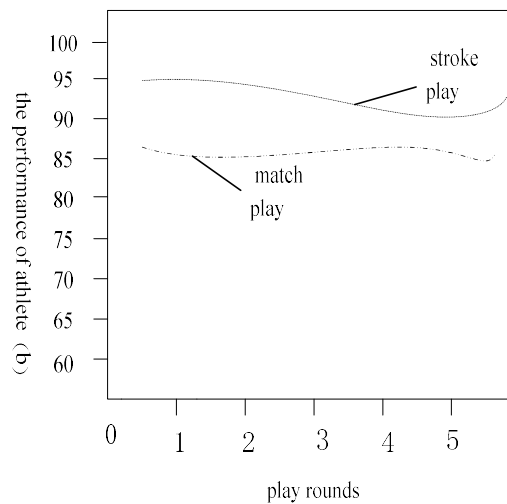
HK.NCCP

International Journal of Intelligent Information and Management Science
ISSN: 2307-0692, Volume 7, Issue 6, December, 2018

Figure 3. Comparison of athletes' performances under different competition rules

According to the figure, athlete (a) is more familiar with pole matches, has less psychological pressure and makes better performance. Athlete (b) is familiar with the two kinds of competitions, and has similar psychological pressure. Thus, there is little difference in his performances.

In addition, the service distance will also cause changes in the players' psychology. The longer the service distance is, the more difficult the technical difficulty is, and the greater the pressure on the players will be. However, due to the change of serving distance, besides the change of players' psychology, there are also changes in difficulty. Therefore, besides psychological factors, there are also factors of difficulty and skill in the performance. Thus, variables that caused by the service distance changes and make influences on the fluctuation of the performance are not single, making it impossible to accurately analyze the decisive factors of performance changes. According to the analysis of these aspects, the influence of psychological self-regulation ability on the performance fluctuation of golf athletes can be seen. The stronger the ability of psychological self-regulation is, the more stable the athletes can play things close to their true technical level. In addition, the ability of psychological self-regulation will also affect the physical health of athletes. If the pressure cannot be relieved in time, the athletes' absorption of food and energy cannot be complete. In the long run, the athletes' physical function will be damaged. Therefore, in golf exercise, attention should not only be paid to the control of professional skills, but also to the mental health of athletes.

5. Conclusion

For a long time, many people believe that the level of athletes' ability is the decisive factor affecting their performance, so great importance are attached to the development of athletes' sports ability. But recently it has been found that the performances of athletes with similar sports level are still different greatly in the competition. The research shows that besides the technical factors of athletes, factors of their own psychological regulation also affect the performance of athletes [10]. System of professional golf tournament in China is not perfect, and its development still needs a long time. In the future, more elements with Chinese characteristics should be integrated into Golf and a golf culture with Chinese characteristics should be built and developed. In addition to improving the golf system and strengthening the training of golfers, more attention should also be paid to the training of the mental health of golfers. After all, golf is a sport that integrates psychology, physical fitness and technology. Today when competitive sports have already developed to a higher level, the gap between athletes in technology and physical fitness has been narrowing down day by day. Therefore, it is of great significance to cultivate athletes' psychological regulation ability. It is hoped that by strengthening the athletes' ability of psychological self-regulation, athletes can perform better and make better achievements.

References

[1] YIN Huaigang, LU Dongdong, HAN Dong. Characteristics and Evaluation of Core Athletic Performance of Foreign Golfers [J]. Journal of Chengdu Sport University, 2018, 40(2): 72-80.

[2] ZHANG Huihui, [J]. ZHANG Liang. Advances in Psychological Science, 2018, 35(7): 43-45.

HK.NCCP

International Journal of Intelligent Information and Management Science
ISSN: 2307-0692, Volume 7, Issue 6, December, 2018

[3] LIU Hanjunlan, ZHAO Shouying, GUO Haihui. The Influence of Visual Working Memory on Attentional Control in Basketball [J]. Studies of Psychology and Behavior, 2018, 43(3): 3690-3697.

[4] LI Jie, LIU Zhiyu, WANG Meiling, et al. Research on Psychological Skills and Failure Coping Strategies of Chinese Elite Sanda Athletes [J]. Journal of Beijing Sport University, 2018, 41(5): 139-145.

[5] LI Jia, TIAN Jianqiang. Analysis of Projectile Motion Law in Golf [J]. Teaching Reference of Middle School Physics, 2017, 40(16): 26-29.

[6] ZHU Liming, ZHONG Biwei, LI Xiaofeng, et al. Research on Kinematical Characteristics of Full Golfer Technique of Elite Golfers [J]. Journal of Guangzhou Sport University, 2018, 22(1):90-93.

[7] ZHU Dapeng. Mental Cognition and Regulation of Amateur Marathon Participator in Competition [J]. Journal of Shandong Institute of Physical Education and Sports, 2018, 16(2): 21-25.

[8] YANG Wei, FANG Xiaoyi, WANG Huanlin. The mediation role of help-seeking intention between mental symptoms and professional help-seeking behavior in adults:the moderating effect of self-efficacy [J]. Chinese Journal of Behavioral Medicine and Brain Science, 2017, 26(3): 276-279.

[9] ZHAO Gai, CHEN Guanghui, KONG Fanchang. Affect of Acute Psychological Stress on Memory Effect: The Regulating Role of Psychological Resilience [J]. Journal of Psychological Science, 2018, 13(2): 39-42.

[10] LI Lingling, ZHAO Peng, LI Hongbiao. Research Progress on Core Muscle Group and Biomechanical Changes of Golfers with Lower Back Pain during Swing [J]. Chinese Journal of Sports Medicine, 2018, 19(2): 61-65