

Research Journal of Pharmaceutical, Biological and Chemical Sciences

The Development Of Intellectual Features Of Students Using A Chess Game.

Alifirov AI¹, Mikhaylova IV^{1*}, Fomina SN¹, Fedchuk DV², Bakulina ED¹.

¹ Russian State Social University, st. V. Pika, 4, Moscow, Russia, 129226

² Sports and Pedagogical College "Department of Sports of Moscow", st. Kirovogradskaya 21, Moscow, Russia, 117519

ABSTRACT

It is known that the game of chess is able to stimulate the intensity of the thinking process, as the constantly flowing activity of the human brain, which regulates the accumulation, analysis and processing of all incoming information. This effect is very beneficial, because it increases the overall level of intellectual development, depending on the dynamics of thought processes, the accumulation of acquired information, which people can later use in various situations related to their practical activities in the outside world. In addition, a regular game of chess can ensure the development of divergent thinking, based on a systematic approach to finding solutions to any tasks. This is especially important because successful mental activity, depending on intellectual development, determines a person's ability to successfully analyze continuously changing conditions of the social environment and successfully adapt to society. The results of the study confirmed the effectiveness of using a chess game in the higher education system as a means of intellectual development of students in high school. The highest indicators in tests that determine intellectual abilities were shown by students who regularly played chess. This fact suggests that the students of the game of chess, increases the activity of the cerebral cortex, which significantly increases the level of their intellectual development due to the pronounced mobilization effect of playing chess on the synaptic processes between neurons. In this regard, it can be considered that a regular game of chess has a positive effect on the improvement of the psyche, for a long time it stimulates their intellectual abilities, smoothing the cycles of working capacity and fatigue of the body during the day, week, month, semester. In addition, a chess game influences the development of aesthetic views, which forms emotional and volitional qualities, fosters character, and develops students' striving for improvement. It can be considered that the use of a chess game in the system of higher education is an effective means of intellectual development of students. In this regard, the use of methods of teaching express courses of a chess game should be recommended as widely as possible in order to intensify the intellectual development of young people and increase the effectiveness of their professional training.

Keywords: intelligence, development, students, psychological features, student age, chess.

**Corresponding author*

INTRODUCTION

Adolescence, as a rule, coinciding with students is a period of pronounced personal development, realization of social potential and individual abilities [1,2,3]. Educational and professional activities at this age are characterized by powerful dynamics of development of intellectual abilities [4,5], has a great influence on the formation of the psyche, basic psychophysiological qualities and contributes to the social formation of a person [6,7].

In connection with the technologization of society, an increase in the flow of information, the acceleration of the pace of life, the load on the human psyche steadily increases [8,9], which leads to a decrease in his physical and mental performance [10,11]. Especially these processes are tangible for young people who devote a lot of time to social networking, which contributes to their passive perception of information without objectifying the specific goal of personal development [12,13]. It is possible to overcome this situation through a regular game of chess. With its help, it is possible to form a personality of a new type - purposeful, initiative, pragmatic, creative, with a clear life attitude and a stable outlook [14]. It is possible to implement this in the course of studying at a university due to the high mobility of students in the changing conditions of modern education, their high intellectual abilities, active thinking, good memory, sustained attention and high efficiency [15]. Considering that in the program for preparing students at a higher education institution there are no specific forms and specific means for developing their intellectual abilities [16], playing chess can be considered as a necessary means of stimulating intellectual and mental qualities and controlling the processes of the emotional-volitional sphere of youth [17,18].

It is especially important to teach students to play chess because of the need for their specific orientation on intellectual development, enhancing their cognitive, communicative and mental activity on solving specific educational and professional tasks. It is recognized that chess is very useful for stimulating the intensity and increasing the productivity of the thinking process, as the constantly flowing activity of the human brain that regulates the accumulation, analysis and processing of all incoming information. The overall level of intellectual development depends on the dynamics of thought processes, the accumulation of acquired information, which is subsequently modeled and interpreted. On its basis, prerequisites are created for the evaluation by a person of phenomena and situations with the subsequent application of products of mental activity obtained experimentally [19]. A regular chess game can ensure the development of divergent thinking based on a systematic approach to finding solutions to any tasks. This is especially important for young people, because its successful mental activity, dependent on intellectual development, determines the future of each young person, helping him successfully analyze the continuously changing conditions of the social environment and adapt to society, thereby helping to build a better future for the country.

The purpose of the study is to assess the impact of regular chess games on the development of students' mental abilities.

MATERIALS AND METHODS

The conduction of the research was approved by the local Ethics Committee of the Russian State Social University in May, 15th, 2017 (Record №5).

The study was conducted in 2017-2018 on the basis of the Russian State Social University, Moscow, Russia. The work recruited a control group (34 people) and an experimental group (38 people) from among the students of the Russian State Social University of various specialties under the undergraduate degree program. The control group consisted of students of the specialties "Journalism" 2 course and "Foreign Regional Studies" 1 course, and the experimental group was made by students of the specialties "Sociology" 1 course and "Design" 3 course.

For the experimental group, an express course of chess was developed and the forms of students' training and training lessons in chess were defined, which included: a simultaneous game of chess; training games (rapid); solving blocks of tasks in tactics and strategy during extra-curricular time; quick chess tournament. The control group did not pass special training in chess.

To determine the level of intellectual development of students used the technique according to D. Wexler. Assessment of the level of intellectual development IQ (intelligence quotient), traditionally carried out using the scale - 11 subtests, 6 of which are of a verbal nature and 5 of non-verbal. The verbal scale consisted of subtests - general awareness, general intelligibility, establishing similarities, repeating numerical series, vocabulary and arithmetic. The non-verbal scale consisted of sub-tests — encrypting numbers, finding missing parts, Kosa cubes, logical presentation of a sequence of pictures, and drawing figures. Interpretation of quantitative estimates of the level of intelligence was carried out in accordance with the table of IQ according to Wexler (Table 1).

Table 1. Estimation of indicators of overall IQ

Level of intelligence	N, score; coefficient IQ
Very tall	< 130
Tall	120-129
Good	110-119
Average	90-109
Low	80-89
Borderline	70-79
Mental defect	> 69

The test for determining the IQ level of students and the calculation of results was carried out using a standard set of statistics.

RESEARCH RESULTS AND DISCUSSION

The assessment of the level of intellectual development of IQ students of the control group and the experimental group was carried out using a scale of 11 subtests, demonstrating the general level of intellectual abilities, 6 of which are verbal and 5 non-verbal. The results of assessing the level of IQ intelligence development in the control group and the experimental group in the course of the experiment are shown in Table 2.

Table 2. Dynamics of the IQ level of the surveyed students

Control points	Level IQ of students in the control group $X \pm \sigma$	Level IQ of students of experimental group $X \pm \sigma$
1 – October 2017	95.0±0.45 (average level)	96.0±0.27 (average level)
2 – December 2017	98.0±0.86 (average level)	107.0±1.32 (average level)
3 – February 2018	99.0±0.73 (average level)	113.0±0.35 (good level)
4 – April 2018	102.0±1.21 (average level)	111.0±1.06 good level ()

Graphically, the dynamics of the level of development of IQ students of the control and experimental groups are presented in Figure 1.

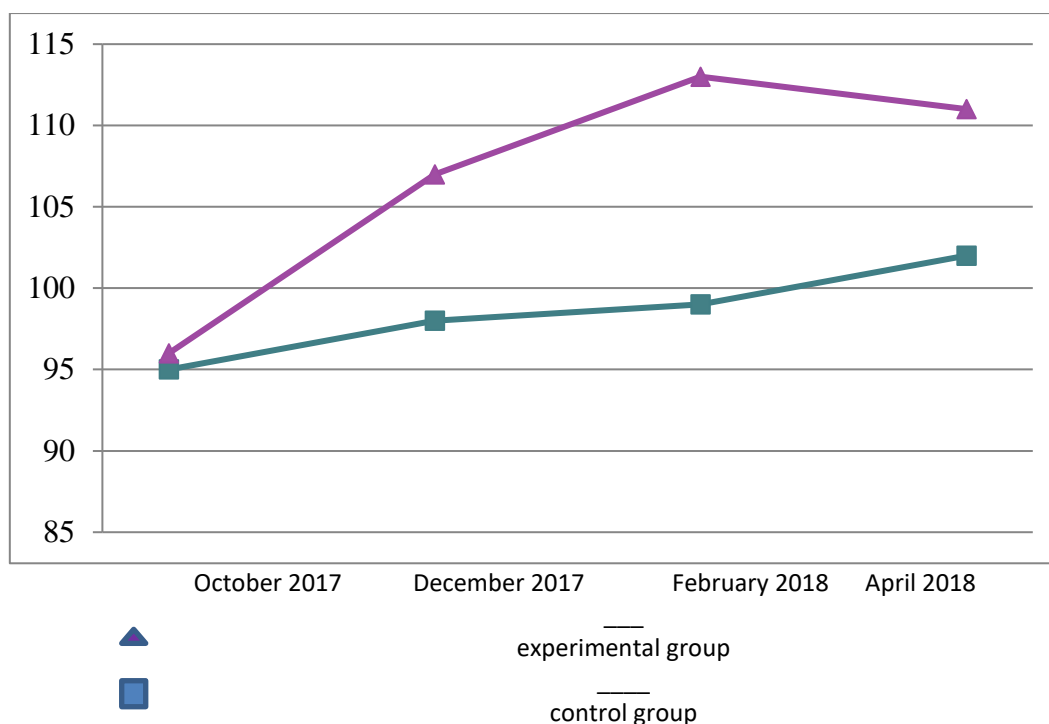


Figure 1. Dynamics of the IQ level of students of the control and experimental groups.

Analysis of the results of a study of the IQ level of students in the control group and the experimental group revealed that in both groups there was a positive change in the IQ level during the year, which was influenced by educational and professional activities. The students of the control group at all control points were found to have an average IQ level. Their overall increase in the IQ coefficient was 7.0%. For students of the experimental group, this indicator is higher, thanks to express courses on chess: the increase in their IQ coefficient compared to the initial data by the end of the year was 14.0%. As a result, by the end of the observation, the IQ level indicators in the experimental group increased from an average level to a level that was rated as good.

The use of regular biologically significant effects on the body always leads to various effects associated with the nature of the impact and the state of the body [20,21,22]. In this regard, it is considered very effective to carry out mild and metered effects on the organism [23,24] and especially on its regular systems [25,26]. This can have a pronounced positive systemic effect [27], contributing to its more complete recovery [28,29] and better social integration, despite the sometimes remaining defects [30,31]. This circumstance dictates the need to continue the search for similar effects on the body in order to improve it [32] and successfully integrate into society [33,34].

The results of the study confirmed the effectiveness of using a chess game in the higher education system as a means of intellectual development of students in high school. The highest indicators in tests that determine intellectual abilities were shown by students of the experimental group. This fact suggests that this effect on the brain significantly enhances its activity [35,36], which increases the level of intellectual development [37-40] due to the pronounced mobilization effect of playing chess on physiological and biochemical processes in neural networks [41,42].

In this regard, it can be considered that regular chess play has a great influence on the formation of the psyche of students [43,44], stimulates intellectual abilities [45], which against this background can be maintained at a high level for a long time [46], smoothing the working capacity and fatigue of the body during the day, week, month, semester [47]. In addition, given that the chess game is capable of influencing the development of aesthetic views [48], regular occupation of it creates emotional and volitional qualities and fosters character [49,50], improves the state of mental qualities of students and improves the overall level of intellectual development [51, 52,53]. With its help, you can ensure greater performance in learning and professional activities [54].

CONCLUSION

Teaching students to play chess according to the method of express courses applied in their work contributes to increasing their development rates of intellectual qualities, which are of great importance for the success of any mental activity. It can be considered that the use of a chess game in the system of higher education is a very effective means of intellectual development of modern students. There is reason to believe that young people who regularly learn to play chess increase the level of activity of thought processes due to the mobilizing influence of the process of this game on the course of life processes in the brain. In this regard, it is necessary to recommend the widespread use in modern universities of the tried and tested teaching methods of express chess game courses to intensify the intellectual development of young people and increase the effectiveness of their professional training.

REFERENCES

- [1] Medvedev IN. (2018) Disaggregation Properties Of Vessels With Respect To Neutrophils In Patients With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4) :1331-1336.
- [2] Medvedev IN. (2018) Antiaggregatory Effects Of Blood Vessels On Erythrocytes In Patients With Dyslipidemia With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4) :1369-1374.
- [3] Medvedev IN. (2018) Antiaggregatory Effects Of Blood Vessels On Erythrocytes In Patients With Dyslipidemia With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4) :1396-1401.
- [4] Medvedev IN. (2018) Vascular Anti-aggregation Control Of Neutrophils In Patients With Dyslipidemia With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4) :1443-1448.
- [5] Makhov AS, Medvedev IN. (2018) Functional State Of Muscles In Sports And Physical Training. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4): 2018; 9(4):965-968.
- [6] Glagoleva TI, Zavalishina SYu, Mal GS, Makurina ON, Skorjatina IA. (2018) Physiological Features Of Hemo-coagulation In Sows During Sucking. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4): 29-33.
- [7] Zavalishina SYu, Makurina ON, Vorobyeva NV, Mal GS, Glagoleva TI. (2018) Physiological Features Of Surface Properties Of The Erythrocyte Membrane In Newborn Piglets. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4):34-38.
- [8] Bikbulatova AA, Karplyuk AA, Parshin GN, Dzhabfar-Zade DA, Serebryakov AG. (2018) Technique for Measuring Vocational Interests and Inclinations in High-School Students with Disabilities. *Psikhologicheskaya nauka i obrazovanie-psychological science and education*. 23(2) : 50-58.doi: 10.17759/pse.2018230206
- [9] Makhov AS, Medvedev IN. (2018) Optimizing Effect Of Static Exercises On Muscle Tone Of The Paravertebral Zone. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4):613-618.
- [10] Makhov AS, Medvedev IN. (2018) Assessment Of The Level Of Preparedness Of Athletes With Infantile Cerebral Palsy For Adaptive Sports. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4):926-930.
- [11] Makhov AS, Medvedev IN. (2018) Features Of Motivation Of Disabled People With Affection Of The Musculoskeletal System To Adaptive Sports. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(4):367-371.
- [12] Glagoleva TI, Medvedev IN. (2018) Physiological Features Of Anti-aggregational Control Of Blood Vessels Over The Shaped Elements Of Blood In Calves At The Onset Of Ontogenesis. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 440-447.
- [13] Makhov AS, Medvedev IN. (2018) Functioning Of The Opiate Brain System. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 495-501.
- [14] Safiulin EM, Makhov AS, Mikhailova IV (2016) Analysis of the factors impeding the development of skill and the number of chess players with the defeat of the musculoskeletal system during the initial sports training. *Theory and practice of physical culture*. 4: 33-35.
- [15] Evseev SP. (2016) *Theory and organization of adaptive physical culture*. Moscow: Sports, 616.

- [16] Makhov AS, Medvedev IN. (2018) Fundamentals Of The Functioning Of The Nervous And Humoral Regulation Of The Heart And Blood Vessels. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 2018; 9(5) : 512-518.
- [17] Makhov AS, Medvedev IN. (2018) Problems Of Epilepsy And Cognitive Activity Of The Brain. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :532-537.
- [18] Makhov AS, Medvedev IN. (2018) The Physiological Role Of Epithalamus In The Body. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 550-554.
- [19] Makhova AV. (2018) Physiology Of The Hypothalamus In The Human Body. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 478-484.
- [20] Makhov AS, Medvedev IN. (2018) The Physiological Role Of Mediators In The Central Nervous System. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 579-583.
- [21] Medvedev IN. (2018) Aggregational Capacity Of Platelets In Patients With Dyslipidemia With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 1199-1204.
- [22] Medvedev IN. (2018) Aggregation Of Erythrocytes In Patients With Arterial Hypertension With Abdominal Obesity And Dyslipidemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 1216-1220.
- [23] Medvedev IN. (2018) Platelet Aggregation In Patients With Arterial Hypertension With Abdominal Obesity And Dyslipidemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :1242-1247.
- [24] Medvedev IN. (2018) Aggregational Properties Of Neutrophils In Patients With Arterial Hypertension With Abdominal Obesity And Dyslipidemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 1305-1309.
- [25] Medvedev IN. (2018) Expression Of Spontaneous Aggregation Of Erythrocytes In Patients With Arterial Hypertension With Hyperuricemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :1343-1348.
- [26] Medvedev IN. (2018) Aggregational Properties Of Platelets In Patients With Arterial Hypertension With Hyperuricemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :1379-1384.
- [27] Medvedev IN. (2018) Aggregational Activity Of Neutrophils In Patients With Hypertension With Hyperuricemia. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 1417-1421.
- [28] Medvedev IN. (2018) Expression Of Spontaneous Aggregation Of Erythrocytes In Patients With Arterial Hypertension With Type 2 Diabetes Mellitus. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :1448-1452.
- [29] Medvedev IN. (2018) The State Of Aggregation Properties Of Neutrophils In Patients With Dyslipidemia With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 1463-1468.
- [30] Bikbulatova AA, Pochinok NB, Matraeva LV, Erokhin SG, Makeeva DR, Karplyuk AV. (2018) The Russian Historical Aspect Of The Development Of The International Federation Of Abilimpix. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :329-335.
- [31] Bikbulatova AA, Pochinok NB, Soldatov AA, Matraeva LV, Erokhin SG. (2018) Organization Of International Competitions Of Professional Skill Among People With Disabilities. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 379-387.
- [32] Medvedev IN. (2018) Aggregation Of Thrombocytes In Patients With Arterial Hypertension With Type 2 Diabetes Mellitus. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :1498-1503.
- [33] Medvedev IN. (2018) Ability To Aggregate Erythrocytes In Patients With Arterial Hypertension With Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) : 1576-1580.
- [34] Medvedev IN. (2018) Aggregation Of Thrombocytes In Patients With Arterial Hypertension And Impaired Glucose Tolerance. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(5) :1604-1609.
- [35] Makhov AS, Medvedev IN. (2018) Functional Features Of Young Football Players With Down Syndrome. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(3) : 678-683.
- [36] Makhov AS, Medvedev IN. (2018) Dynamics Of A Functional State Of Players With Oligophrenia In Conditions Of Sports Competitions. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*. 9(3) : 938-941.

- [37] Bikbulatova AA, Andreeva EG, Medvedev IN. (2018) Hematological Features Of Patients With Osteochondrosis Of The Spine. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(3) : 1089-1095.
- [38] Oshurkova JuL, Medvedev IN, Tkacheva ES. (2018) Functional Features Of Platelet Aggregation In Heifers Of The Ayrshire Breed, Which Are Being Prepared For Insemination. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(3) : 1155-1160.
- [39] Makhov AS, Medvedev IN. (2018) Functional Features Of Children With Cerebral Palsy Having Low Physical Activity. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(3) : 1428-1432.
- [40] Makhov AS, Medvedev IN. (2018) Correction Of Asthenia In Football Players With Down Syndrome. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 1161-1166.
- [41] Makhov AS, Medvedev IN. (2018) The Ability to Reduce the Severity of Motor Disorders in Children With Cerebral Palsy. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 991-996.
- [42] Oshurkova JuL, Medvedev IN, Fomina LL. (2018) Physiological features of platelet aggregation in calves of Ayrshire breed during the phase of plant nutrition. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 1008-1013.
- [43] Makhov AS, Medvedev IN. (2018) General improvement of children with Down syndrome by means of regular soccer lessons. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 1014-1019.
- [44] Oshurkova JuL, Medvedev IN, Fomina LL. (2018) Physiological Indices of Platelet-Coagulation Hemostasis in Purebred Irish Cows in The Course of Lactation. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 419-426.
- [45] Makhov AS, Medvedev IN. (2018) General Assessment of The Health Status of Children with Down Syndrome Who Have Low Physical Activity. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 427-431.
- [46] Makhov AS, Medvedev IN. (2018) Basics of Prevention and Correction of Asthenic Syndrome in Young Footballers With Down Syndrome. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 522-526.
- [47] Medvedev IN. (2018) The Image of The Physical "I" In People with Disabilities with Hemi Paresis as A Result of Hemorrhagic Stroke. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 527-532.
- [48] Makhov AS, Medvedev IN. (2018) Problems of Physical Rehabilitation of Children with Down Syndrome with Injuries of The Lower Limb. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 615-619.
- [49] Medvedev IN. (2018) Correction of the image of the physical "I" in people with disabilities with hemiparesis who underwent a hemorrhagic stroke. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 697-704.
- [50] Makhov AS, Medvedev IN. (2018) Evaluation of the effectiveness of the complex rehabilitation of children with oligophrenia in the degree of imbecility, who underwent fracture of the lower limb. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(2) : 731-736.
- [51] Gusarov AV, Kornev AV, Kartashev VP, Nekrasova MV. (2018) Effect Of Static Exercises With A Deflection On The Tone Of The Skeletal Musculature Of Middle-Aged Women. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(4) : 1716-1724.
- [52] Zhalilov AV, Mironov IS. (2018) Identification Of The Most Significant Shortcomings Of Sports Competitions In Sambo Among People With Hearing Impairment In A Separate Region Of Russia. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(3) : 672-677.
- [53] Bepalov DV, Kharitonov EL, Zavalishina SYu, Mal GS, Makurina ON. (2018) Physiological Basis For The Distribution Of Functions In The Cerebral Cortex. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(5) : 605-612.
- [54] Bikbulatova AA, Andreeva EG, Medvedev IN. (2018) Hematological Features Of Patients With Osteochondrosis Of The Spine. Research Journal of Pharmaceutical, Biological and Chemical Sciences. 9(3) : 1089-1095.