Introduction. The International Olympic Committee recognized chess as a sport in 1999; the world chess movement has up to 605 million participants [1]. The world practice in the field of sports, including its adaptive forms, highlights the technical and tactical component as the central link of the system of sports training. Content analysis of the works of theorists and practitioners of chess sports [A. Alekhine (1932), M.M. Botvinnik (1939), L. Polgar (1993), M.I. Dvoretsky (1985), V.A. Bologan (1996), Liu Wenzhe (2003), M. Vershinin (2005), F. Gobet, P.J. Jensen (2005), Dang Van Zung, G.K. Kasparov, M.R. Kobalia (2007), Yu.E. Simkin (2007), V.A. Potkin (2011), Zuong Thanh Bin (2013), Ngo Huynh bien (2014)] did not reveal the unity of ideas about the content and criteria for assessing the effectiveness of technical and tactical training (TTT) [3, 4, 7–9, 11–17, 21]. In addition, it was necessary to consider the global inclusive trends, the existence in any country of the world of up to 10% of persons with disabilities, as well as modern reforms in chess sport, implemented in changing the rules and time of matches, in the integration of pedagogical and electronic technologies [2, 5]. Those factors determined the relevance of the study and defined its aim, which is to present the pedagogical concept realized by a set of standard and innovative means, methods, organizational forms of adaptive TTT along with psychological and pedagogical support and comprehensive supervision allows to effectively transform the intellectual potential of a chess player into a sports result.

Aim. The purpose of the study is to determine the systemic directions and priority ways and develop the stages and technologies for technical and tactical training of people with disabilities for achieving the effective results in chess sport in the long-time perspective. Materials and methods. The empirical study of technical and tactical training conducted in 2005–2015 involved 1275 persons at the age from 10 to 72 years with musculoskeletal disorders, hearing or visual impairments. The criteria for assessing the effectiveness of technical and tactical training were diagnostic questionnaires, specialized chess tests, as well as the following psychodiagnostic techniques: the Spielberger State-Trait Anxiety Inventory (STAI); well-being, activity, mood test (“SAN”-test); The Short Form-36; the UCLA Loneliness Scale. Results. The survey revealed the actual factors hindering effective sports training: difficulties in reaching the training sites, lack of information about chess sections and Internet availability. The upward trend in the technical and tactical training (TTT) dynamics is confirmed by the growth of results due to implementing strategy and tactics – up to 31 %; the development of operational thinking – up to 25 %; recent memory – up to 27 %, evaluative function – up to 31 %. As a result of sports training 72 chess players achieved the ranks and titles of The International Chess Federation, including the title of “International Chess Grand Master”. Conclusion. The pedagogical concept realized by a set of standard and innovative means, methods, organizational forms of adaptive TTT along with psychological and pedagogical support and comprehensive supervision allows to effectively transform the intellectual potential of a chess player into a sports result.

Keywords: chess sport, chess players with disabilities, technical and tactical training, psychological and pedagogical support, performance criteria.
vice Centers “Alekseevsky” and “Yuzhnopopor-
tovy” (TSSCs); Federal State Budgetary Educa-
tional Institution of Higher Education “Russian
State Social University” (RSSU). At the sports
and recreative stage 211 persons were involved
into the adaptive chess sport training (TSSCs,
2009–2010); 1018 persons were involved at
the initial training stage (RSSU, 2012–2015);
28 persons – at the stage of sports specialization
(“Chess planet”, 2005 and 2008). In order to
identify problems that hinder the effective im-
plementation of sports training, at the first stage
of psychological and pedagogical experiments,
a survey was organized.

At the second stage, chess players were
tested. A set of specialized technical, tactical and
psychological tests concerning the dynamics of
significant intellectual functions and properties
of the individual (recent memory and operational
thinking, evaluative function) formed the criteria
for assessing the effectiveness of TTT [7, 8].

At the third stage, a comprehensive supervision
over the psychophysical activity of chess players
with disabilities was carried out according to
the generally accepted in the world scientific
community scales, namely: the Spielberger State-
Trait Anxiety Inventory (STAI), well-being, ac-
tivity and mood assessment test (“SAN”-test),
the quality of life test (The Short Form-36);
the subjective feelings of loneliness test (D. Ras-
sell and M. Ferguson test) [6, 10, 19, 20]. Ma-
thematical and statistical data processing was
carried out using the average values methods,
factor and correlation analysis.

**Results and discussion.** The distinguishing
characteristic of chess sport is an integrated com-
bination of components of technical and tactical
training in the concept, which refers to the degree
of development of mental actions and the charac-
teristics of the sports discipline “chess”, as well
as the ability of the chess player to conduct intel-
lectual combat in the process of competitive ac-
tivity using a variety of tactics, techniques and
forms of their implementation. As a theoretical
and methodological basis, the concepts of pro-
grammed learning and systematic and gradual
formation of mental actions and concepts were
used [18]. The pedagogical concept of TTT was
implemented by standard and innovative means,
methods, organizational forms of tactical and
technical training, the optimal combination of
psychological and pedagogical support and im-
plementation of comprehensive control over the
psychophysical activity of chess players with
disabilities. Along with the standard means of
chess training, the Internet portal “Chess Planet”,
the public chess training platform “Chess Les-
sions by Anatoly Karpov”, the author’s electronic
database “Schematic Thinking”, as well as other
chess software that created a developed electronic
environment for the implementation of the TTT
were used. As the main methods circuit training,
the real time training and the method of individu-
als tasks were implemented; organizational forms
of TTT were represented by the integration of
full-time, remote and electronic forms. The dyna-
amics of indicators for assessing the effective-
ness of adaptive TTT can be detailed as follows.
The results of the survey revealed the most sig-
ificant factors impeding the effective implemen-
tation of the TTT (varying in points on a scale
from 1 – “absolutely irrelevant” to 10 – “abso-
lutely relevant”), namely: at the sports and rec-
reation stage – “Lack of information about chess
interest groups, sections and clubs” (xM = 9.21);
at the stage of initial training – “Lack of free In-
ternet access” (xM = 9.10); at the stage of sports
specialization – “Inability to reach the training
sites” (xM = 9.21).

The choice of the technical and tactical tests
presented in the table 1 was determined by the
tasks and requirements of the specific stage of
preparation. It should be noted that the maximum
growth rates in technical and tactical tests were
achieved at the sports and recreation stage
(up to 106 %), while the tests aimed at the as-
essment of intellectual properties and functions
were not carried out, since the requirements of
the Federal standards of sports training do not
apply to this stage. The maximum growth rates in
the results of intellectual properties and functions
of individuals were achieved at the stage of initial
training (up to 31 %). This was due to the inclu-
sive trends in the sports training in regard to RSSU
students: the subjects practiced together the fol-
lowing Chess World, Europe and the Olympic
Games Champions: S.A. Karyakin, V.E. Gunina,

Comprehensive supervision of the psycho-
physical activity of chess players with disabilities
revealed the following dependencies: according
to the assessment of anxiety, the maximum de-
crease in personal and situational anxiety was
observed at the stage of initial training – from 31
to 35 %, respectively, and the average decrease in
personal and situational anxiety in all stages
of sports training amounted to 28 and 29 % re-
spectively.
The positive dynamics of the growth in the results was observed in the SAN-test with a significant spread of indicators of well-being, activity, mood from 16 to 34 %. The maximum decrease in the level of subjective feeling of loneliness was achieved at the stage of sports specialization and amounted to 43 %, with an average decrease of 36 % at all stages of sports training.

The results of the SF-36 test revealed an improvement in the psychological health of chess players with disabilities by 16 % with a slight increase in the physical component by 4 %.

**Conclusion**

1. Content analysis of domestic and foreign studies revealed the lack of theoretical justification of the system of technical and tactical training taking into account not only modern reforms in chess sport, but also the requirements of adaptation of content, tools, methods and organizational forms to the health status of chess players.

2. Significant factors impeding the effective implementation of adaptive chess technical and tactical training were ranked.

3. The means, methods and organizational forms of technical and tactical training creating a developed electronic environment of chess competitive training activities were defined.

4. The criteria for evaluating the effectiveness of technical and tactical training represented by a set of specialized chess tests to assess the development level of technical and tactical skills and recent memory dynamics, operational thinking and evaluative function of chess players with disabilities were drawn up.

5. It is established that the pedagogical concept of adaptive chess technical and tactical training implemented in a set of standard and innovative tools, methods, organizational forms of technical and tactical training along with psychological and pedagogical support taking into account the heterogeneity of the target population and comprehensive psychological and pedagogical supervision, is effective and has no analogues in the world.

As a result of sports training, the intellectual potential of chess players with disabilities was transformed into a sports result - 72 chess players achieved the ranks in compliance with the Unified Sports Classification System of Russia.

A.V. Gabrielyan became an international grandmaster, A.V. Komissarov won the World Champion title among visually impaired chess players as a member of the Russian national team.

### Table 1

<table>
<thead>
<tr>
<th>Sports and recreative stage; (n = 211)</th>
<th>The rate of growth* (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria for evaluating the effectiveness of technical and tactical training</td>
<td></td>
</tr>
<tr>
<td>Specialized technical and tactical tests</td>
<td></td>
</tr>
<tr>
<td>Game rules</td>
<td>+65</td>
</tr>
<tr>
<td>The ability to play</td>
<td>+106</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The initial stage of chess sport training; (n = 1018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria for evaluating the effectiveness of technical and tactical training</td>
</tr>
<tr>
<td>Specialized technical and tactical tests</td>
</tr>
<tr>
<td>Chess opening</td>
</tr>
<tr>
<td>Endgame</td>
</tr>
<tr>
<td>Strategy</td>
</tr>
<tr>
<td>Tactics</td>
</tr>
<tr>
<td>Game rules</td>
</tr>
</tbody>
</table>

| Tests evaluating intellectual properties and functions | |
|----------------------------------------------------------|
| Recent memory | +27 |
| Operational thinking | +25 |
| Evaluative function | +31 |

<table>
<thead>
<tr>
<th>Stage of sports specialization; (n = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria for evaluating the effectiveness of technical and tactical training</td>
</tr>
<tr>
<td>Specialized technical and tactical tests</td>
</tr>
<tr>
<td>Chess opening</td>
</tr>
<tr>
<td>Middle/middle</td>
</tr>
<tr>
<td>Endgame</td>
</tr>
<tr>
<td>Strategy</td>
</tr>
<tr>
<td>Tactics</td>
</tr>
</tbody>
</table>

| Tests evaluating intellectual properties and functions | |
|--------------------------------------------------------|
| Recent memory | +20 |
| Operational thinking | +20 |
| Evaluative function | +21 |

*at p ≤ 0,05.
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Цель исследования: определение системных направлений, приоритетных путей, разработка этапов и технологий технико-тактической подготовки лиц с отклонениями в состоянии здоровья для достижения эффективных результатов в шахматном спорте на долгосрочную перспективу. Материалы и методы. В эмпирическом исследовании процессов реализации технико-тактической подготовки, проведенном в период 2005–2015 гг., приняли участие 1257 лиц от 10 до 72 лет, имеющие поражения опорно-двигательного аппарата, слуха, зрения. База исследования: Интернет-портал «Шахматная Планета» (www.chessplanet.ru); территориальные центры социального обслуживания населения «Алексеевский», «Южнопортовый» г. Москвы; ФГБОУ ВО «Российский государственный социальный университет». Критериальную базу оценки эффективности технико-тактической подготовки составили диагностическое анкетирование, специализированные шахматные тесты, а также тесты динамики оперативного мышления, оперативной памяти, оценочной функции. Комплексный контроль над психофизической активностью шахматистов был проведен по психиdiagностическим методикам: оценки тревожности (по Ч.Д. Спилбергеру), самочувствия, активности, настроения (по тесту САН), качества жизни (The Short Form-36); субъективного ощущения одиночества (по Д. Расселу и М. Фертюсону). Математико-статистическая обработка данных осуществлялась методами средних величин, факторным и корреляционным анализом. Результаты. Анкетирование выявило актуальные факторы, препятствующие эффективной спортивной подготовке: сложности при транспортировке к местам тренировок, отсутствие информации о шахматных секциях и доступного Интернета. Восходящий тренд динамики технико-тактической подготовки подтверждается финальными темпами прироста результатов в том числе: по стратегии и тактике – до 31 %, по развитии интеллектуальных качеств по оперативному мышлению – до 25 %, оперативной памяти – до 27 %, оценочной функции – до 31 %. В результате спортивной подготовки 72 шахматиста выполнили разряды и звания Международной шахматной федерации, включая титул «Международный гроссмейстер по шахматам». Заключение. Педагогическая концепция, реализуемая совокупностью стандартных и инновационных средств, методов, организационных форм адаптивной технико-тактической подготовки в единстве с психолого-педагогическим сопровождением и комплексным контролем, позволяет эффективно преобразовать интеллектуальный потенциал шахматиста в спортивный результат. Ключевые слова: шахматный спорт, шахматисты с отклонениями в состоянии здоровья, технико-тактическая подготовка, психолого-педагогическое сопровождение, критерии эффективности.

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