Therapeutic Physical Training, Sport Medicine and Physical Rehabilitation

UDC 796.03-056.26

TRAINING ATHLETES WITH DISABILITIES AT THE STAGE OF SPORT AND REHABILITATION

Mariia Roztorhui[1], Alina Perederiy[1]

[1]Lviv State University of physical culture, Lviv, Ukraine, mariia.roztorhyi@gmail.com

https://doi.org/10.29038/2220-7481-2018-01-61-66

Abstract

Topicality. The analysis of scientific and methodological literature shows the lack of a unified approach to compiling training system and peculiarities of compiling training programs for athletes of different nosological groups at different stages of long-term training. ***The Purpose of the Study*** is to identify the characteristics of training athletes with disabilities at the stage of sports and rehabilitation training in strength sports. ***Methods and Methodology of the Study.*** To solve this task, analysis and summary of scientific and methodological literature was carried out; sociological methods (questionnaire) was used; methods of mathematical statistics. The research was carried out on the basis of 15 Regional Centers of Physical Culture and Sports for the Disabled «Invasport», 54 coaches in strength sports participated in our research. ***Results.*** Based on the analysis of obtained results, we have found out to what extent the declared tasks of sports and rehabilitation stage in the practice of adaptive sports were realized; as well as recommended types of sports to be included in the training program at the stage of sports and rehabilitation training for athletes with visual impairment and injuries to locomotor system in strength sports. Specialists in the field of adaptive sports consider the stage of sports and rehabilitation training solely within the framework of solving the problems of recreation and rehabilitation of people with disabilities. This determines the need to ensure sporting orientation of athletes with disabilities, preparation and creation of prerequisites for further sports training in future at the stage of sports and rehabilitation training. ***Conclusions.*** Having determined the significance of sports for athletes with disabilities, it has been established that the most appropriate for athletes with visual impairment and locomotors injuries is to include swimming, powerlifting, athletics, and armwrestling in training program. The necessity of scientific and methodological substantiation of training programs for athletes of different nosological groups in strength sports at the stage of sports and rehabilitation training has been confirmed.

Key words: athletes, long-term training, rehabilitation, sports, disability.

Марія Розторгуй, Аліна Передерій. Підготовка спортсменів з інвалідністю на етапі спортивно-реабілітаційної підготовки в силових видах спорту. Актуальність. Аналіз науково-методичної літератури свідчить про відсутність єдиного уніфікованого підходу до побудови багаторічної підготовки та особливостей побудови програм підготовки для спортсменів різних нозологічних груп на різних етапах багаторічної підготовки. ***Мета дослідження*** – виявлення особливостей підготовки спортсменів з інвалідністю на етапі спортивно-реабілітаційної підготовки в силових видах спорту. ***Метод та методологія проведення роботи.*** Для розв'язання поставленої мети використано аналіз та узагальнення науково-методичної літератури; соціологічні методи (анкетування); методи математичної статистики. Дослідження проводили на базі п'ятнадцяти регіональних центрів фізичної культури і спорту інвалідів «Інваспорт» з залученням п'ятдесяти чотирьох тренерів із силових видів спорту. ***Результати роботи.*** На основі аналізу отриманих результатів виявлено ступінь реалізації задекларованих завдань етапу спортивно-реабілітаційної підготовки в практиці адаптивного спорту, визначено рекомендовані види спорту для включення в програму підготовки на етапі спортивно-реабілітаційної підготовки для спортсменів із вадами зору й пошкодженнями опорно-рухового апарату в силових видах спорту. Фахівцями галузі адаптивного спорту етап спортивно-реабілітаційної підготовки розглянуто виключно в межах виконання завдань рекреації та реабілітації осіб з інвалідністю, що визначає необхідність забезпечення реалізації спортивної орієнтації спортсменів з інвалідністю підготовки та

створення передумов для поглибленої спортивної підготовки в майбутньому на етапі спортивно-реабілітаційної підготовки. ***Висновки.*** У результаті визначення значущості включення видів спорту встановлено, що в програму підготовки для спортсменів із вадами зору та пошкодженнями опорно-рухового апарату найбільш доцільно включати плавання, пауерліфтинг, легку атлетику й армспорт. Підтверджено необхідність науково-методичного обґрунтування програм підготовки для спортсменів різних нозологічних груп у силових видах спорту на етапі спортивно-реабілітаційної підготовки.

Ключові слова: спортсмени, багаторічна підготовка, реабілітація, види спорту, інвалідність.

Мария Розторгуй, Алина Передерий. Подготовка спортсменов-инвалидов на этапе спортивно-реабилитационной подготовки в силовых видах спорта. **Актуальность.** Анализ научно-методической литературы свидетельствует об отсутствии единого унифицированного подхода к построению многолетней подготовки и особенностей построения программ подготовки для спортсменов различных нозологических групп на различных этапах многолетней подготовки. ***Целью*** исследования является выявление особенностей подготовки спортсменов с инвалидностью на этапе спортивно-реабилитационной подготовки в силовых видах спорта. ***Метод и методология проведения работы.*** Для решения поставленной цели использованы анализ и обобщение научно-методической литературы; социологические методы (анкетирование), методы математической статистики. Исследование проводили на базе пятнадцати региональных центров физической культуры и спорта инвалидов «Инваспорт» с привлечением пятидесяти четырех тренеров по силовым видам спорта. ***Результаты работы.*** На основе анализа полученных результатов выявлена степень реализации задекларированных задач этапа спортивно-реабилитационной подготовки в практике адаптивного спорта, определены рекомендованные виды спорта для включения в программу подготовки на этапе спортивно-реабилитационной подготовки для спортсменов с нарушениями зрения и повреждениями опорно-двигательного аппарата в силовых видах спорта. Специалистами отрасли адаптивного спорта этап спортивно-реабилитационной подготовки рассматривается исключительно в рамках решения задач рекреации и реабилитации лиц с инвалидностью, что определяет необходимость в обеспечении реализации спортивной ориентации спортсменов с инвалидностью подготовки и создания предпосылок для углубленной спортивной подготовки в будущем на этапе спортивно-реабилитационной подготовки. ***Выводы.*** В результате определения значимости включения видов спорта установлено, что в программу подготовки для спортсменов с нарушениями зрения и повреждениями опорно-двигательного аппарата наиболее целесообразно включать плавание, пауэрлифтинг, легкую атлетику и армспорт. Подтверждается необходимость научно-методического обоснования программ подготовки для спортсменов различных нозологических групп в силовых видах спорта на этапе спортивно-реабилитационной подготовки.

Ключевые слова: спортсмены, многолетняя подготовка, реабилитация, виды спорта, инвалидность.

Introduction. The efficiency of training athletes with disabilities directly depends on the degree of implementation of a rational combination of the foundations of the general theory of athletes training and the nosological peculiarities of athletes in adaptive sport during the long-term training [2; 6; 7; 9; 12]. Scientific knowledge concerning structure, contents, purpose and tasks of stages in training athletes with disabilities has polystructural character [3; 5; 8; 11; 13].

The traditional approach to building long-term training presupposes the use of theoretico-methodological aspects of the general theory of training healthy athletes in adaptive sport. V. M. Derkach and G. A. Yedynak assume that the general theory of training should form the basis for periodization of sports training of athletes with lesions of the musculoskeletal system as a long-term training process taking into account mental peculiarities of athletes with disabilities and providing the inclusive education (mutual training sessions of healthy athletes and disabled) [4].

A specific approach to building the long-term training of athletes in adaptive sports is based on fundamental researches of S. P Yevseyev, Yu. A. Briskin, A. V. Perederiii, L. V. Biankina,
A. V. Khotymchenko and others. [1; 2; 3; 5; 14]. The basis of this approach is the reflection of the periodization from the perspective of a specific component of the system of training the athletes with disabilities, which should be based not only on objectively existing regularities of the formation of sports mastery, which are reflected in specific kinds of sport, but also on general concept of adaptive sport [1; 2; 3; 10].

It should be noted that there is no unified approach to scientific and methodological support of the long-term training of athletes with disabilities as to quantity, structure and content of long-term development stages. However, the regulatory documents of youth sports schools for persons with disabilities state the possibility of creating rehabilitation training groups which presupposes prior acquitance of athletes with different sports. In scientific papers written by Yu. A. Briskin the necessity of singling out the first stage of

long-term training of athletes with disabilities is proved. It should provide the execution of correctional-rehabilitation program [1]. This statement is reflected in scientific and methodical works of S. P. Yevseyev, but the author categorizes this stage as sports and recreative and proves the necessity of developing programs for training athletes of different nosological groups [2].

Despite the attempts of scientists to prove the necessity of singling out in the structure of long-term athletes training a particular stage, the focus of which is determined by the necessity of solving rehabilitation and sports tasks, the need to determine the structure and content of this stage, peculiarities of building the training programs for athletes of different nosological groups still remains.

The purpose of the research is to find out the peculiarities of training the athletes with disabilities at the stage of sports and rehabilitation training in strength sports.

Material and methods of research. To solve this task, we used the following research methods: the analysis and reviewing of scientific and methodological literature; sociological methods (questionnaire); methods of mathematical statistics. The survey was conducted on the basis of 15 Regional Centers of Physical Culture and Sports for the Disabled "Invasport". 54 coaches in strength sports participated in our research. Among them were the Honored coaches of Ukraine (n = 13), top-level coaches (n = 10), coaches of the first category (n = 16), coaches of the second category (n = 10), coaches without category (n = 5). The average experience of work with athletes with disabilities was 9.44 years. For mathematic-statistical processing of the obtained data the average arithmetic value (X), the mean square deviation (σ), and the coefficient of concordance were calculated using the method of Kendall (W).

Research results and discussion. To find out the effectiveness of the implementation of the tasks of the stage of the sports rehabilitation training that are declared in the writings of Yu. A. Briskin [1], the respondents were asked to identify the degree of their completion in training the athletes with disabilities. According to the experts in the process of training persons with disabilities the following tasks of the stage of sports rehabilitation training are performed in full (100,00%): reducing the duration and improving the effectiveness of primary training, extension of the range of movement habits and skills; the implementation of positive effects on health promotion, improving physical development and physical fitness, formation of adaptive-compensatory mechanisms in the bodies of athletes with disabilities; normalization of motor activity, recovery of muscle strength, prevention of muscle atrophy, prevention and treatment of contractures, development of skills in independent movement.

As can be seen from the data, the statistical majority of the respondents believes that in the process of training the athletes with disabilities in strength sports at this stage of development, the problems of sports orientation of athletes with disabilities and creation preconditions for profound sports training in the future are not solved (18.52% respondents) or partially solved (35.18% respondents). Among the interviewed coaches 46,30 % state that the training of athletes at the stage of sports rehabilitation training provides for the implementation of sports orientation and creation preconditions for profound sports training. 81,48% of respondents believe that the problem of reducing the negative impact of sports activities on the body of highly qualified athletes with disabilities in the process of training is not solved.

The obtained results allow to assume that in the practice of sport the stage of sports rehabilitation training in the structure of long-term training of athletes with disabilities in strength sports is viewed by specialists within the tasks related to recreation and rehabilitation of persons with disabilities. However, besides rehabilitation tasks, this stage of training must have a sports focus that will allow for the implementation of sports orientation of athletes with disabilities and creation the preconditions for profound sports training in the future. The survey suggests that each stage of the long-term training of athletes in strength types of adaptive sports must contain a rehabilitation component that must be implemented depending on the objectives and the focus of the stage.

To identify sports, the inclusion of which in the training program at the stage of sports rehabilitation training, according to experts, will facilitate the sports orientation for athletes with disabilities, the respondents were asked to distribute sports according to their importance for each nosological group. In this case, the list included such sports that do not require significant financial investments, and the technique of sports is characterized by relative technical simplicity.

Determining the feasibility of incorporating sports into the program at the stage of sports rehabilitation training by specialists with the goal of promoting sports orientation of athletes with lesions of musculoskeletal system has allowed to find out that the most important sports are powerlifting – 660 points

(SD = 0,60); swimming – 642 points (SD = 0,90); arm-wrestling – 560 points (SD = 0,71) (table. 1). To sports, the inclusion of which in the program at the stage of sports rehabilitation for training athletes with lesions of musculoskeletal system has a medium level of significance belong wheelchair basketball – 471 points (SD = 0,46); sitting volleyball – 432 points (SD = 0,40); bocce – 329 points (SD = 0,76); table tennis – 328 points (SD = 0,98); wheelchair dancing– 284 points (SD = 0,93). The least significant sports, according to experts is badminton – 216 points (SD = 0,63); football – 133 points (SD = 0,54); orienteering – 114 points (SD = 1,22); Futsal – 81 points (SD = 0,53).

Table 1

The relevance of including sports in the program of preparation of the stage of sports rehabilitation for training the athletes with lesions of musculoskeletal system (according to the survey results, n=54)

№	Sports	Average rank	Total score	Standard deviation (SD)
1.	Powerlifting	12,22	660	0,60
2.	Swimming	11,89	642	0,90
3.	Armsport	10,61	573	0,95
4.	Athletics	10,37	560	0,71
5.	Wheelchair basketball	8,72	471	0,46
6.	Sitting volleyball	8,00	432	0,40
7.	Bocce	6,09	329	0,76
8.	Table tennis	6,07	328	0,98
9.	Wheelchair dancing	5,89	284	0,93
10.	Badminton	4,00	216	0,63
11.	Football	2,76	133	0,54
12.	Orienteering	2,11	114	1,22
13.	Futsal	1,50	81	0,53

To assess the consistency of respondents' answers, Kendell's coefficient of concordance, equal to 0.747, was determined, which suggests satisfactory consistency between respondents.

As a result of the analysis of the ranking for the athletes with visual impairment, according to the respondents, the recommended sports to be included in the training program at the stage of sports and rehabilitation training for visually impaired persons are swimming, which scored 557 points (SD = 0.63); powerlifting – 513 points (SD = 0.67); athletics – 473 points (SD = 1.45) and armsport – 465 (SD = 0.79) (table 2). According to the ranked assessments, the medium level of significance was pointed out for the following sports: goalball – 367 points (SD = 0.60); football – 303 points (SD = 0.70); futsal – 274 points (SD = 0.66); judo – 207 points (SD = 0.99). According to the respondents, sports tourism is the least expedient sport for athletes with visual impairment – 176 points (SD = 0.66), chess – 92 points (SD = 0.52) and checkers – 71 points (SD = 0.47). At the same time, the level of consistency between respondents was satisfactory (coefficient of concordance W = 0.732).

Table 2

The relevance of including sports in the program of preparation of the stage of sports rehabilitation for training the athletes with visual impairment (according to the survey results, n=54)

№	Sports	Average rank	Total score	Standard deviation (SD)
1	**2**	**3**	**4**	**5**
1.	Swimming	10.31	557	0.63
2.	Powerlifting	9.50	513	0.67
3.	Athletics	8.76	473	1.45
4.	Armsport	13.29	465	0.79
5.	Goalball	6.80	367	0.60
6.	Football	5.61	303	0.70

End of table 2

1	2	3	4	5
7.	Futsal	5.07	274	0.66
8.	Judo	3.83	207	0.99
9.	Sports tourism	3.26	176	0.66
10.	Chess	1.70	92	0.52
11.	Checkers	1.31	71	0.47

Based on the analysis of the results, the expediency of inclusion of sports in the training program at the stage of sports and rehabilitation training for athletes of different nosological groups was determined. In this case, the results of the study can be used only to justify the program of training athletes with disabilities at the stage of sports and rehabilitation training exclusively for further sports orientation in strength sports. Leading positions in assessing the significance of sports for both nosological groups, represented in strength sports, were taken by swimming, powerlifting, athletics and armsport. The rehabilitation effect of swimming and athletics on the body of athletes with disabilities is commonly recognized by specialists in the field of adaptive sport. Great amount of points for powerlifting and armsport in evaluating the significance of the inclusion of sports in the training program at the stage of sports and rehabilitation training for athletes of different nosological groups can be justified on two sides. Since the survey was conducted among specialists in strength sports, a subjective factor in determining the significance of sports can be present. The feasibility of incorporating powerlifting and armsport into the program of preparation at the stage of sports and rehabilitation training for athletes with disabilities with the aim of athletic orientation and the creation preconditions for profound sports training in the future in strength sports is unquestionable.

Conclusions. It has been established that in the practice of sport there is a need to ensure the implementation of the sports orientation of athletes with disabilities and the creation of preconditions for profound sports training in the future, which should take place at the stage of sports and rehabilitation training as a structural element of the long-term training of athletes with disabilities in strength sports.

Having determined the significance of sports to be included in the training program at the stage of sports and rehabilitation training for athletes of different nosological groups in strength sports, it has been established that swimming, powerlifting, athletics, and armsport are the most appropriate sports to be included.

The results of the research prove the need for a scientific and methodological justification of the training program at the stage of sports and rehabilitation training for athletes of different nosological groups in strength sports.

Further research is suggested to develop the training programs at various stages of long-term training for athletes of various nosological groups in strength sports.

References

1. Briskin, Iu. A. (2005). Etap nachalnoi sportivnoi podgotovki invalidov – korrekcionno-reabilitacionnaia programma [Correctional and rehabilitation program as a stage of initial sports training for people with disabled]. *Fizicheskoe vospitanie studentov tvorcheskikh specialnostei*, 7, 86–93.
2. Briskin, Iu. A., Evseev, S. P. & Perederii, A. V. (2010). Adaptivnyi sport [Adaptive sport]. Moscow: Sovetskii sport.
3. Biankina, L. V. & Khomichenko, A. V. (2015). Problemy vydeleniia etapov sportivnoi podgotovki pauerlifterov s porazheniem oporno-dvigatelnogo apparata [Problems of defining stages of training for powerlifters with musculoskeletal injuries]. *Uchenie zapiski universiteta imeni P. F. Lesgafta*, 10(128), 33–36.
4. Derkach, V. M. & Iedinak, G. A. (2014). Do pytannia pro periodyzaciiu i zmist pidgotovky legkoatletiv-paralimpiiciv iz porushenniamy oporno-rukhovogo aparatu u svitli zagalnoi teorii sportyvnogo trenuvannia [The issue of the periodization and content of training of athletes with disabilities in musculoskeletal system within the general theory of sports training]. *Pedagogika, psikhologiia ta mediko-biologichni problemi fizichnogo vikhovannia i sportu,* 5, 13–18.
5. Perederii, A. V. & Roztorgui, M. S. (2016). Teoretyko-metodychni pidkhody do periodyzacii bagatorichnoi pidgotovky sportsmeniv u adaptyvnomu sporti [The theoretical and methodological approaches of periodization training of the athletes in adaptive sport]. *Sportivnij visnik Pridniprovia,* 1, 91–95.
6. Barfield, J. P., Malone, L. A., Arbo, C. & Jung, A. P. (2010) Exercise intensity during wheelchair rugby training. *Journal of Sports Sciences*, 28(4), 389–398.
7. DePauw, K. P. & Gavron, S. J. (1995). Disability and sport. Champaing: Human Kinetics.

8. Fidler, A., Schmidt, M. & Vauhnik, J. (2017). Ways that people with a chronic spinal cord injury participate in sport in the Republic of Slovenia. *Journal of Physical Education and Sport*, 17(3), 1892–1898.
9. Fishe, J. A., McNelis, M. A., Gorgey, A. S., Dolbow, D. R. & Goetz, L. L. (2015). Does Upper Extremity Training Influence Body Composition after Spinal Cord Injury? *Aging and Disease*, 6(4), 271–281.
10. Gee, C. M., West, C. R. & Krassioukov, A. V. (2015). Boosting in elite athletes with spinal cord injury: a critical review of physiology and testing procedures. *Sports Medicine*, 45, 1133–1142.
11. Herasymenko, O., Mukhin, V., Pityn, M. & Larysa, K. (2016). Shift of physical activity index for individuals with lower limb amputations as influenced by the comprehensive program of physical rehabilitation. *Journal of physical education and sport*, 16(1), 707–712.
12. Imas, Ye., Borysova, O. & Kohut, I. (2017). The role of motor activity in the social integration of disabled individuals. *Fizychne vyhovannia, sportsi kultura zdorovia u suchasnomu suspilistvi : zb. nauk. pr. Volyn. nac. un-tu im. Lesi Ukrayinky*, 1 (37), 18–23.
13. Kraszewski, K. (2012). Zasady postępowania w urazach sportowców wyczynowych [Basics of activities in the situation of injuries in athletes]. *Fizychne vyxovannya, sportsi kultura zdorovia u suchasnomu suspilstvi : zb. nauk. pr. Volyn. nac. un-tu im. Lesi Ukrayinky*, 4 (20), 372–375.
14. Winnick, J. & Porretta, D. (2017). *Adapted Physical Education and Sport* (6th ed.). Champaing: Human Kinetics.

Received: 05.02.2018