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Розроблено орієнтовний зміст програмного матеріалу занять з фізичного виховання згідно років навчання. До нього увійшли вправи з основних рухів (з ходи, бігу, з перекату, кидання, ловіння, метання, вправи з стрибків, з повзання та лазіння, з рівноваги), загальнорозвиваючі вправи (для рук та плечового пояса, для ніг, для тулуба), прикладні вправи для тренування маніпулятивної функції рук (на тонку моторику рук, вправи для грубої моторики рук і ніг, а також вправи на грубу моторику володіння тілом).

Розроблено орієнтовні рухливі ігри та ігрові вправи (ігри з ходою, бігом, рівновагою, ігри з повзанням і лазінням, ігри з киданням і ловінням м'яча). Розроблена методика проведення корекційних занять з фізичного виховання [1]. Дану програму впроваджено в навчально-виховний процес спеціального дитячого садка № 34 м. Суми.

#### ЛІТЕРАТУРА

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#### THE PROGRAMME OF PHYSICAL TRAINING CORRECTIONAL STUDIES WITH THE MENTALLY BACKWARD CHILDREN OF PRE-SCHOOL AGE SVITLANA BILOUSOVA

*Sumy State Pedagogical University named after A.S. Makarenko*

We worked out the programme and also the approximate contents of the programme material and methods of physical training correctional studies with the mentally backward children in conditions of special pre-school educational institutions according to the age of training.

#### SPORTS PREPARATORY MEETING OF IMPAIRED WEIGHTLIFTERS DURING COMPETITION PERIOD AS A DIRECT FORM OF PREPARATION FOR THE WORLD CHAMPIONSHIPS

#### СПОРТИВНІ ПІДГОТОВЧІ ЗУСТРІЧІ НЕПОВНОСПРАВНИХ ВАЖКОАТЛЕТІВ ПРОТЯГОМ ЗМАГАЛЬНОГО ПЕРІОДУ, ЯК БЕЗПОСЕРЕДНІЙ МЕТОД ПІДГОТОВКИ ДО ЧЕМПІОНАТУ СВІТУ

BOLACH EUGENIUSZ, BOLACH BARTOSZ, WO NIEWSKI MAREK

*Faculty of Physiotherapy Academy of Physical Education*

**Key words:** physiotherapy, disabled people sport, powerlifting

One of the sports disciplines, which is exercised by impaired sportsmen is weightlifting, called in that case powerlifting. Due to the high level of this discipline in Poland, coaches in

many countries to model of their work on Polish experiences in forms and organization of coaching of powerlifting [3,4,5,6].

In the powerlifting the rules of International Weightlifting Federation as well as the rules of Federation of International Games in Stocke Mandeville are complied with. Lifting is performed in lowing back position on special bench adapted to impaired competitors and designed in consistency with the rules of International Sports Federation of Disabled (ISOD).

#### Groups and sports class of impaired weightlifters

Impaired weightlifters are divided into several separate groups depending on kind and grade of their disability. There are the following groups and sports classes:

**Group I** – blind and with partial loss of sight; classes B2 and B3,

**Group III** – with amputated lower extremities; classes A1, A2, A3, A4 and A10,

**Group IV** – with paralysis of lower and upper extremities; classes 2,3,4,5, and 6,

**Group V** – with other harm of motor organs; classes L2, L3 and L5,

**Group VI** – with cerebral palsy; classes C4, C5, C6, C7 and C8.

#### Starting groups

The weightlifters take part in a competition in two starting groups. Such division was made due to the existence of morph-functional differences between impaired sportsmen and to their different abilities to achieve the maximum results.

**I Starting group** – sports group I: classes B2, B3;

– sports group I: classes A1,A2,A3,A4,A10;

– sports group IV: classes 2,3,4,5,6;

– sports group V: classes L2,L3,L4,L5;

**II Starting group** - sports group VI: classes C4,C5,C8.

#### Categories of body weight

Competitors are divided into weight categories in accordance to their body mass. The categories used for women are different from those used for men. From 1988 the following weight categories are applied [2]:

Men	Women
1. to 48,0 kg,	1. To 40,0 kg,
2. from 48,01 to 52,0 kg,	2. From 40,01 to 44,0 kg,
3. from 52,01 to 56,0 kg	3. from 44,01 to 48,0 kg,
4. from 56,01 to 60,0 kg,	4. from 48,01 to 52,0 kg,
5. from 60,01 to 67,5 kg,	5. from 52,01 to 56,0 kg,
6. from 67,51 to 75,0 kg,	6. from 56,01 to 60,00 kg,
7. from 75,01 to 82,5 kg,	7. from 60,01 to 67,50 kg,
8. from 82,51 to 90,0 kg,	8. from 67,51 to 75,0 kg,
9. from 90,01 to 100,0 kg,	9. from 75,01 to 82,5 kg,
10. over 100,0 kg.	10. over 82,5 kg.

The special conversion of estimated body mass was introduced for competitors with amputation of lower extremities. In that case a certain part of body mass is added to the measured body mass in relation to the extent of amputation [2].

Hence, when amputation was within:

**Foot** – 1/54 of body mass is added;

**Calf** – 1/36 of body mass is added;

**Thigh** – 1/18 of body mass is added;

Corrections mentioned above are summed in the case of two-sided amputation

#### The yearlong training plan for impaired weightlifters from the national team

The following one year long training cycle is used in preparation of impaired weightlifters [5,6,8]:

#### I Preparatory period

- Subperiod of general preparation,
- Subperiod of special preparation.

**II. Competition period**

- Subperiod of stabilization of physical form,
- Subperiod of competitions.

**III. Transition period**

- Subperiod of active recovery,
- Subperiod of passive recovery.

**Characteristics of the starting period**

Primary objective during that period is to improve all the contents of training, which enable an athlete to increase his skill, and in consequence to gain better sports results [3,10]. These aims are realized by applying special training loading. Significant attention is paid to some peculiarities of training process, which improve stabilization and fluency of performing of a movement task. In consequence the sportsmen's effort become more intensive while its volume decreases at the same time [5,6]. The practical objective, which is taken into account during the competition period, is to prepare the competitor to the technically correct execution of lifting with submaximal or maximal weights, the elimination of observed errors and, finally, psychological and tactical preparation to competition. The good planned program of training loading and application of proper training sources obviously should improve sports achievements of a competitor. In the weightlifting, where strength, power and speed are the main factors, the maximal intensity of training is distinctly growing up contrary to its volume, which gradually decreases [5,6,10].

**The role of sports preparatory meeting during competition period**

The central sports meeting of impaired weightlifters from national team is an important element of the competition period in their preparation for the World Championship. The meeting enabled both competitors and their coach to have direct and mutual contact in special circumstances. A possibility to use the rich collection of devices and special sports equipment essential for training, constant supervision by coach, biological recovery, proper caloric and diet nutrition, influence of highland's microclimate and separation from everyday troubles – all this contribute to the increasing of sports ability of impaired athletes. Coaches organized the meeting, and they jointly determined its aims, program tasks, its character and division of participants into exercise groups, which result from the training organization. General daily schedule (from wake up at the morning till the night silence) and daily programs of exercises (place, kind of occupation, number of hours etc) were also established by coaches. Consistent realization of the program assured its fruitful execution. The final sports form of competitors, as an effect of preparation, was confirmed by the control test. Based on the results of test a coach had an opportunity to assess each competitor individually, to judge a whole training process and to introduce some changes in the future.

**Sports meeting scheme**Kind of meeting

Direct preparation of members of national team of impaired weightlifters for the World Championship.

Objective of meeting

To improve the competitor's technique of weightlifting with submaximal and maximal loading as well as tactical and psychological preparation for the World Championship.

Duration of meeting

Time limits: from 1 till 14 October 1998

Place of meeting

Meeting was organized in Polish Association of Impaired Sportsmen center "Start" in Wisła (Beskid mountains) The center is suitably adapted to the needs of impaired sportsmen. The best sportsmen which do prepare themselves for some of the most important sports events like Olympic Games or World Championships may use the superbly designed equipment which is gathered there. Moreover, the city Wisła is situated in the region which is famous for its landscape and healthy climate. It is very popular resort among convalescents after respiratory and heart diseases, and persons getting treatment of their exhaustion states.

Management of meeting

The weightlifters who took part in the meeting had been selected previously on the basis of their sports achievements both in country and international contests as well as results of tests, which

verify their chances in confrontation with competitors from top places on the world ranking lists. They practice under leadership of coordinator trainer and coach of the national team of impaired weightlifters.

#### *Daily schedule during the meeting*

- 7,30 wake up
- 8,00 breakfast
- 10,00-11,30 first training, including
  - 10,00-10,30 general developmental exercises;
  - 10,30-11,30 division into training groups
    - Group I – cycle of exercises with weight
    - Group II – exercises with use of sports devices
- 13,00 lunch
- 13,00-15,00 rest time
- 15,30 second training (both groups together):
  - 15,30-16,00 general developmental exercises;
  - 16,00-17,00 cycle of exercises with weight
- 18,00 supper
- 19,00 biological recovery
- 22,30-7,30 night silence

#### **Training method applied during the meeting**

One training unit lasted 90 minutes, involving an introductory part – the warm up, followed by the main part, i.e. training with weight, then finally – kinezytherapy and relaxation.

Within the first week of the meeting exercises were performed during five days, twice a day, then – within the second week, also during five days, but once a day. After two weeks of training five days break followed, which preceded directly a competition.

In the training unit the three-partial arrangement of exercises was used [3, 4, 5, 7].

- **Part I (introductory)** – presented kind of a “warm-up”. The goal was to stimulate competitor’s system, especially his functional reserves, for increased effort during the main part of a training. Warm-up, apart from ordinary and common exercises have consisted of some exercises which respected certain kind of sportsman’s disability. These exercises were done in positions, which prevented dysfunction.
- **Part II (main)** – lasted 60 minutes, and its essence was the existence of maximal effort and psychical concentration, which appeared in a suitable moment for execution a training task in the given unit. It was also important to assess how much maximal effort the organism of a competitor could afford. Exercises with weight lifted on the bench were fundamental ones during the competition period.

#### **Work with the weight in the main part**

**1<sup>ST</sup> WEEK** – lifting the weight in lying down position on back involved the following training cycle, planned by trainers:

- **Morning training**
  - 40% of maximal weight (8 repetitions in 3 series),
  - 60% of maximal weight (6 repetitions in 3 series),
  - 70% of maximal weight (8 repetitions in 3 series),
  - 80% of maximal weight (4 repetitions in 3 series),
  - 90% of maximal weight (2 repetitions in 2 series),
  - 100% of maximal weight (1 repetition in 2 series),
  - 70% of maximal weight (6 repetitions in 4 series);
- **Afternoon training**
  - 60% of maximal weight (6 repetitions in 3 series),
  - 70% of maximal weight (4 repetitions in 3 series),
  - 80% of maximal weight (4 repetitions in 3 series),
  - 90% of maximal weight (2 repetitions in 2 series),
  - 100% of maximal weight (1 repetition in 2 series);

**2<sup>ND</sup> WEEK** - lifting the weight in lying down position on back according to the following scheme:

- 60% of maximal weight (6 repetitions in 3 series),
- 70% of maximal weight (8 repetitions in 3 series),
- 80% of maximal weight (4 repetitions in 2 series),
- 90% of maximal weight (2 repetitions in 1 series),
- 95% of maximal weight (1 repetition in 1 series),
- 100% of maximal weight (1 repetition in 2 series).

The cycles mentioned above were executed in possibly short time during the meeting, to improve – first of all – the special endurance of a competitor. From the results of next tests trainers got an information if it is possible to increase progressively the maximal weight, which is a basis for computation of training cycle. Progressively increased weight forms the special strength of a competitor.

- **Part III (final)** – had a calming down character, and lasted about 15 minutes. Both gradual decreasing of an effort and properly selected exercises enable the rest. This calming part involved stretching exercises, removing cramps, which arise during training, relaxing and respiratory exercises.

#### **Differences in training methodology of impaired and healthy competitors**

Main differences in structure of a training unit as applied in impaired competitors in comparison with healthy ones lie in the necessity of applying the rehabilitation elements. Warming up, apart from exercises which gradually prepare of a competitor's system to an effort in the main part, have consisted of some correction exercises which were adapted to certain kind of dysfunction. The final part, calming up, included some relaxation exercises in isolated positions. Volume of training curves for impaired competitors had differed from that for healthy ones. The differences resulted from the frequency of rest breaks, which were more frequent in impaired athletes. The use of some training means was dependent on functional ability of an impaired competitor. Exercises in isolated positions (sitting down, laying) did predominate.

Impaired sportsmen from sports group III and IV have gone in weightlifting most eagerly. The training sources, which were applied in amputated sportsmen, differ from ones used in weightlifters with paraplegia mainly in entrance position during generally fitting exercises. Amputated sportsmen could do that exercises in any position while those with paraplegia, due to their less motor abilities could perform exercises only in laying or sitting down position. Special exercises were done in both sports groups in the same position, namely lying on back on a weightlifting bench.

An important rehabilitation element of the training was to strengthen some features of character of a sportsmen like will or personality. It was done during the phase of indirect preparation before competition. So called "competition attitude" was the effect, which was gained by proper adjusting of training and rest forms as well as some additional elements (like warming up conditions) to conditions which appear during real competition. So "competition attitude" presented very important factor in psychological preparation of a competitor. The great role during that phase played receiving some information about an opponent and theoretical preparation to competition circumstances. The complex of those factors, on a basis of preparation in physical fitness, techniques and tactics, stimulated competitor and led to readiness to start in competition.

#### **Biological recovery after training during sports meeting**

Sportsmen were put in course of meeting to very heavy training (submaximal or maximal loading). External conditions caused often physical or psychological stress, which was connected with expectation of both the trainer and the competitor. The occurrence of such stress made the training difficult, especially referring to possibility of repetition of loading in short time. For that reason it was necessary to keep correct equilibrium between training, after training activities and active or passive rest. The most effective way which lead to full regeneration of impaired sportsmen was including of different methods of biological recovery into the training process. The recovery carried out properly accelerated restitution of an organism, removed fatigue, stimulated supercompensation, enabled increasing of training loading and decreased risk and frequency of minor injuries.

#### **Means and method of biological recovery used during the meeting**

A. Natural means

I. Kinotherapy

During the active rest of impaired competitors the action of antagonistic muscles was recommended, since it is connected with compensation effect which such exercises cause in the tired central nervous system. The restitution proceeded faster than by the full rest.

#### II. Sleep and passive rest

Participants had to obey the fixed timetable during the meeting. Hours 22,00-7,30 was devoted to night sleep. The whole time intended for sleep was 9-10 hours, about 80-90% of it at night. Remaining sleep time, e.g. nap after lunch, was admitted on condition that there were no disturbance in training program. Relaxation technique and classical massage was used to facilitate falling into a deep relaxing sleep. Sportsmen slept in dark, well-aired room.

#### III. Way of life

Concerns mainly families, friends and personal relationships in the team. The organizers took care about friendly relations between sportsmen and proposed varied forms of spending of free time. A good contact between coach and competitors developed a healthy means of taking up of different problems, and solving of them immediately.

#### B. Physiotherapy

##### I. Classical massage

This form of biological recovery was used during the meeting the most frequently. Sportsmen most often complained of a pain of main groups of muscles, which were directly engaged in a work during the exercises with load. Classical massage was applied to such part of the body where masseur detected increased reactivity or some changes of the state of tissue. Depending on clinical symptoms, kind and size of massaged tissue or effect which was expected, different techniques of classic massage were applied. Surface area stroking, deep stroking, rubbing, kneading, tapping, shaking, vibration – were used most frequently.

##### II. Hydrotherapy and balnotherapy

Water procedures were often applied due to the rich collection of suitable equipment available in the Center. Athletes used the rotational or underwater massages every day after training. It gave them full relaxation and fast restitution. Twice a week they took a bath in saline water or went to sauna.

##### III. Electrotherapy

All procedures of electrotherapy were performed under supervision of a physician, which commissioned them and specified kind and parameters of procedures adequately to clinical symptoms. Among other applied procedures were: diadynamic currents, laser therapy or ultrasounds.

#### C. Psychological means of biological recovery

Considerable efforts the athletes undertook to be up to high demands stated by coaches caused not only an immense physical effort but also excessive intensity of psychological experiences. Among athletes, who came bearing heavy burden of daily training, especially during the sports meeting, some symptoms of weariness and psychological exhaustion were observed. These symptoms were the following: aggressiveness, difficulty with attention, outbursts of violent and extreme emotions, fear, and excessive suffering from failures. States of weariness and psychological exhaustion decreased the efficiency of doings in training process. Suggestion, autosuggestion and psychotonic training occurred to be effective means in the psychological recovery.

An important element of meeting was the fact, that coach picked out every psychological state of athletes and by individual talks with them tried to solve their problems immediately. Frank talking was one of the simplest ways of psychological defusing. During the meeting some relaxation techniques were applied, which facilitated obtaining the full relax and proper psychological recovery. Relaxation technique by Jacobson and autogenous training method by Schultz were mostly popular among athletes. These techniques were applied before falling asleep in well aired room, in silence or with special music, which facilitated relaxation.

Relaxation technique by Jacobson is aimed to accomplish proper control of muscle tonus. The relaxation process is directed by parasympathetic nervous system, stimulation of which causes reducing of the blood pressure, slowing down the perspiration, and decreasing of muscle tonus. Individual exercises, which were done according to that technique caused total relaxation and reducing muscle tonus.

Autogeneous training method by Schultz is however a relaxation technique, aim of which is to improve the mechanisms of selfregulation by increasing the individual resistance to stress. The training was based on six psychophysiological exercises, which were performed in calm circumstances, in lying position with closed eyes.

Independently on the applied method of relaxation training, the most significant were passive, unforced psychological attitudes and unforced relation to achieved results.

#### **Nutrition of impaired weightlifters**

An important factor, which contributed to increasing of abilities of impaired weightlifters, was the right nourishment, properly selected as regards its amount and quality. During training or sports competitions an athlete could expend only such amount of energy as he obtained in a form of food. It was also significant if food had not only proper amount of calories but also optimal composition as regards its quality. It could contain sufficient amount and proper proportion of the all substances, which are necessary to preserve the activity of an athlete. The good balanced nutrition has to satisfy the daily demand of an athlete for such nutritious components like proteins, fat, carbohydrates, vitamins, mineral compounds and water. In weight lifting the mean caloric demand for nourishing components is according to Schuler, in the case of an athlete with 89 kg of body mass, about 6800 kcal/day. Caloric and percentile participation of individual components is the following: 1490kcal (22%) falls to proteins, 2450 kcal (33%) to fat and 2860 (42%) to carbohydrates [3]. The energy expense after 1 hour of the training calculated per 1 kg of body mass equals approximately between 2,7 and 3,0. The right composition of nourishment which respect the high energetic needs of an organism and with special emphasis placed on the growing up of force, must have the following proportions: the mass of supplied protein to mass of provided fat and carbohydrates should be like 1:1:4 [3].

Great energy consumption of an athlete is connected, first of all, with considerable participation of carbohydrates in diet. Its content in organism is about 500 g, and 150 could be only used. Such reserve is makes possible intensive work only for relatively short time. Insufficient supply of carbohydrates leads to fast lowering of glycogen spare in muscles and liver, and consequently to increasing of effort ability of an organism [8]. The basic carbohydrate in the diet of athletes was the starch (patatoes, cereal products, pasta, rice), which more effective intensifies synthesis of glycogen than other monosaccharides. The participation of saccharose in and glucose in the whole amount of carbohydrates, which were eaten by athletes, didn't exceed 10-15%. It must be remembered, that there is some critical period in which accumulation of glycogen can proceed faster [9, 11]. This saccharum does accumulate fasten if carbohydrates are eaten during the first 60 minutes after the training end. Since in that time the enzymes, which regulate synthesis of glycogen, are very active. For this reason the athletes drunk during that time many carbohydrates-rich drinks. It is also very important to drink proper amount of water while saccharum is taken in. Each molecule of carbohydrate needs three molecules of water to be accumulated in muscles. In the course of physical effort the athletes had drunk additional amount of carbohydrates drinks.

Beside carbohydrates the main source of energy are fats, which supply unsaturated fatty acids essential for an organism. Fats are also carriers of vitamins A, D, E, K, which are soluble in them. Amount of fat in daily foot ration has to equal about 1,5-1,8 gram per 1 kg of body mass. In fat diet the delivering to an athlete the proper amount of necessary unsaturated fatty acids (NUFA) should be taken into account. They present essential components of cell's building materials and are necessary in correct transport of lipids in a system. Special role they play in transport and metabolism of cholesterol (they decrease its concentration in blood). Necessary unsaturated fatty acids were eaten mainly in vegetable oils, margarine and, in smaller amount, in brown bread or barley porridge.

Proper supply of proteins is particularly significant in weightlifting, where special emphasis is placed on increase in strength. Proteins are the lasts, after carbohydrates and fats, energetic substrate, which may be used in muscle work. They are essential, among the other things, to renovation of tissue, proteins in that became degraded in course of physical effort. In the strength-type sports daily demand for protein equals 2,0-2,5 g/kg of body mass [9, 11]. Proteins can be divided into fully and not fully valuable. Fully valuable are those, which include all the amino acids. Such products like white of an egg, milk or meat of some fishes (cod) supply the proteins, which include all the exogenic amino acids (lysine, metionine, phenylalanine, treonine, tryptophan,

arginine, isoleucine, leucine and valine). Among proteins of plant origin only that from soya beans is fully valuable, and additionally includes many vitamins and mineral salts.

Balanced supply of water, mineral salts and vitamins is very significant in the feeding of impaired weightlifters, since it is closely connected with metabolism of the other nutritious components in an organism. In the course of intensive physical effort the perspiration achieved several liters per day. In the process of perspiration an organism had loosed some electrolytes necessary to its correct function, especially such like sodium, potassium, calcium, iron, and vitamins from group B [9, 11]. The main symptoms of loss of water were thirst, less amount of urine, weakness and aggressiveness. Duration of work with maximal load was also clearly shorter. A shortage of liquids was supplemented by unsaturated mineral water, which was rich of sodium, potassium and magnesium ions. The delivered drink must contain mineral compounds and vitamins. Mineral compounds play important role in activity both of muscles and nervous system. These compounds not only keep proper value of osmotic pressure in a cell, but also influence the acid-alkaline equilibrium of a system. Besides they are the activators of several enzymes. During an increased physical effort some vitamins are loosed too. Thus demand for these compounds increases, mainly for vitamins from B group as well as vitamins A, C and E. The demand for vitamins is greater if faster is the metabolism. During the exercises performed two times a day the amount of delivered vitamins was insufficient, so lack of them was replenished by special vitamin specimens [9, 11].

Intensive exercises, necessity of keeping the high level of strength ability and endurance, all this led to creation of negative energetic balance. It caused the higher demand for certain food components. Normal feeding couldn't fulfill these needs, and necessity of so called "supplementation", i.e. enrichment of food by some nutrients-supplements, had appeared. To supplements belong some concentrates, rich of certain components, which are completed according to exactly described rules, in order to fulfill the particular demands of nutrition. Such nutrients delivered to an organism easy assimilable food components, i.e. energetic, building and regulating compounds, concentrated in a small volume.

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### Summary

In the paper a specificity of the sports meeting (which had been organized at the end of competition macrocycle) of impaired weightlifters from the national team. The meeting presented itself the indirect form of preparation to the World Championships.



All the elements, which might to facilitate the realization of the main aim, namely participation in all the most important competitions in yearlong training plan, were presented. The meeting enabled athletes from different sports clubs in the country to exercise together. It caused special conditions of a training process both for athletes and coaches, due to the opportunity of mutual contacts between them. There are many positives connected with such a meeting like rich collection of special equipment and sports devices, constant supervision by coaches, using of effective biological restitution, proper and caloric nutrition, healthy highland's climate, separation from everyday troubles and possibility of concentration on the training process only. All this made that the meeting had become a significant element of the competition macrocycle. Positive factors mentioned above caused an increasing of indices, i.e. athletes had lifted greater maximal loads during the final tests than at the beginning of the meeting.

The sports meeting of impaired weightlifters from the national team occurred to be very significant in the process of preparation of them to participation in important international competitions. It enabled them to achieve the highest sports form during competitions.

### СПОРТИВНІ ПІДГОТОВЧІ ЗУСТРІЧІ НЕПОВНОСПРАВНИХ ВАЖКОАТЛЕТІВ ПРОТЯГОМ ЗМАГАЛЬНОГО ПЕРІОДУ, ЯК БЕЗПОСЕРЕДНІЙ МЕТОД ПІДГОТОВКИ ДО ЧЕМПІОНАТУ СВІТУ

У статті розкривається специфіка спортивних зустрічей (які були організовані в кінці змагального макроциклу) неповносправних важкоатлетів національної збірної команди. Ці змагання є непрямую формою підготовки до чемпіонату світу. Всі елементи, які повинні належати здійсненню основної мети, а саме участі найважливіших змаганнях річного плану, є проаналізовані.

### TYPY PO CZE Y POWIERZCHOWNYCH PRZEDRAMIENIA U NIEPE NOSPRAWNYCH ZAWODNIKÓW UPRAWIAJ CYCH PODNOSZENIE CI ARÓW (POWERLIFTING)

### ТИПИ ПОЄДНАНЬ ПОВЕРХНЕВИХ СУДИН ПЕРЕДПЛІЧЧЯ НЕПОВНОСПРАВНИХ СПОРТСМЕНІВ, ЯКІ ЗАЙМАЮТЬСЯ ВАЖКОЮ АТЛЕТИКОЮ

EUGENIUSZ BOLACH, RYSZARD JASI SKI, WOJCIECH SEIDEL

*Zak ad Sportu Osób Niepe nosprawnych Wydzia Fizjoterapii*

**Sowa kluczowe:** sport niepe nosprawnych, podnoszenie ci arów „powerlifting”, po czenia powierzchni ylnie przedramienia

#### *I. Wst p*

Podnoszenie ci arów „powerlifting” jest dyscyplin sportu bardzo dynamicznie rozwijaj c si w Polsce, a osi gane wyniki tak w grupie amputowanych (w obr bie ko czyn dolnych), paraplegików, a ostatnio pora e mózgowych, stoj na wysokim, wiatowym poziomie. Wielu zawodników s mistrzami Europy, wiata i Paraolimpiady, i stanowi wzór dla ci arowców niepe nosprawnych w wielu krajach. Struktura jednostkowa treningu wzorowana jest na teorii treningu osób pe nosprawnych, z modyfikacjami obejmuj cymi elementy rehabilitacyjne tj. wiczenia korekcyjne, specjalistyczne (rozci gaj ce) oraz relaksacyjne dostosowane indywidualnie do mo liwo ci morfofunkcjonalnych poszczególnych niepe nosprawnych zawodników. W podnoszeniu ci arów osób niepe nosprawnych stosuje si przepisy Mi dzynarodowej Federacji Podnoszenia Ci arów i Federacji Mi dzynarodowych Igrzysk w Stocke Mandeville, za wyciskanie odbywa si na awie ci koatletycznej, dostosowanej do potrzeb niepe nosprawnych i zgodnej z przepisami Mi dzynarodowej Federacji Sportu Niepe nosprawnych (ISOD).

Specyficzny charakter wysi ku w tej dyscyplinie sportu dla osób niepe nosprawnych sprawia, e ukad kr enia poddawany jest tutaj szczególnie du ym obci eniom. Dotyczy to zw aszcza ko czyn górnych, które w gównej mierze bior udzia podczas pracy treningowej i