

Katedra Rehabilitacji Klinicznej, Akademia Wychowania Fizycznego w Krakowie
Chair of Clinical Rehabilitation at the Academy of Physical Education in Cracow, Poland

ANNA MARCHEWKA

Training and sports competitions versus physical efficiency and social maturity of people mentally handicapped to a moderate and severe degree

Trening i zawody sportowe a sprawność fizyczna i dojrzałość społeczna osób upośledzonych umysłowo w stopniu umiarkowanym i znacznym

Sport done in the circle of handicapped people can be understood as an activity leading to the development of motor efficiency impaired due to different reasons. The range of possible improvement during training, which at the same time is a rehabilitation process, usually depends on the degree and type of motor restriction of the mentally handicapped. A state of health and physical efficiency enabling basic activities of daily living is a success for some handicapped people, while others even aim at undertaking a job in special conditions.

Young people with learning disabilities willingly take part in motor activities, but only sports competitions are for them an exciting and memorable experience arousing exceptional atmosphere, providing possibilities of unusual competition for the recognition and appreciation by their friends and all healthy people, and teaching them how to perform social function.

The main objective of the author of this paper is to show dependencies between training and participation in sports competitions and physical efficiency and social maturity of the examined persons based on a group of people mentally handicapped to a moderate and severe degree.

METHODS

The research involved 94 people aged 16 – 22, with the average age of 17.8 ± 2.69 , attending special training and educational centres or complexes of special schools. All the people involved had documented mental impairment to a moderate or severe degree, and their average IQ equalled 37.6 ± 4.29 in the Terman-Merrill scale. People on wheelchairs, walking on crutches and those with whom it was impossible to communicate were excluded from the test.

A town with a population over 100 thousand inhabitants was a permanent place of residence for the majority of young people under the research - 78.9%. The rest of the individuals lived in the country. The selected group of young people came mainly from families with vocational or secondary education.

STUDY PROTOCOL

In order to obtain relevant information on the patients and their families, there was employed a study protocol elaborated by the author of this paper for her prior research (Marchewka A. 2000a; 2000b).

Gunzburg's Test. Gunzburg's PAC Test (Gunzburg, 1974a; 1974b), adjusted, with the author's approval, to Polish conditions by Witkowski (1997) was employed to assess social development of people mentally handicapped to a moderate and considerable degree. PAC 1 and 2 (Progress Assessment Chart 1 and 2) are tools elaborated especially for children, young and adult people with

mental impairment. The performance assessment was carried out on the basis of a triple research carried out at one-year intervals.

The Eurofit Special Test. The Eurofit Special Test (Ziemilska. & Skowroński, 1996), adjusted to mentally handicapped people, was employed to assess physical efficiency. Attempts at assessing physical efficiency were carried out in the following order: a standing broad jump test (SBJ) – the assessment of jumping skills, a sit ups test in long lying position (SUP) – the assessment of abdominal muscles strength, while the assessment of the local endurance consisted of the following: a bending forward test – the flexibility assessment, a 10-metre run – the speed assessment, a medical ball throw for distance – the assessment of strength and coordination, and walking on a gym bench – the balance assessment.

THE METHODOLOGY OF STATISTICAL ANALYSIS

The results of the research were assessed by means of Statistica, a special set of software.

A statistical analysis of basic parameters of all the assessment results was carried out. In the case of quantitative data, the analysis results were described by means of the average value and standard deviation parameters, while the qualitative (coded) data were described by the comparison of absolute number of cases and their percentage participation in the analyzed group.

The group of people under the research was divided into three sub-groups, depending on the assessment of their sports activity. The analysis of qualitative variables results (e.g. the assessment of balance while walking on a gym bench) was carried out based on contingency tables, followed by the hypothesis verification of dependencies of the above results on sports activity with the implementation of Chi² test. The results achieved (test results and significance) are presented in the tables below. The comparison of average values of constant variables (e.g. results in running and jumping) for the three groups distinguished, depending on the sports activity, was carried out by means of a single factor variance analysis. The values of F-Snedecor's test and statistical significance are shown in the tables (Petrie & Sabin, 2000).

RESULTS

In order to establish dependencies between participation in training and competitions, and their impact on physical efficiency and social competence of mentally impaired people to a moderate and severe degree, the persons were divided into three groups:

- ⇒ actively engaged in sport, i.e. the ones who at least take part in training and regional sports competitions (n=16),
- ⇒ actively engaged in sport only on the days of sport at school, i.e. the ones who took part in sports competitions only at their schools and only on the days of sport (n=59),
- ⇒ not actively engaged in sport, i.e. the ones who do not take part in any sports competitions (n=19).

Table 1. Participation in sports competitions and physical efficiency - part 1.

Table 2. Participation in sports competitions and physical efficiency – part 2.

The results of long jump tests differ significantly between the group of actively engaged in sport and the remaining groups for the benefit of those taking part in competitions. There were not observed statistically vital differences in the trials of abdominal muscles strength, agility and running among the three groups. However, all the above tests showed differences for the benefit of those actively engaged in sport, taking part in sports competitions (Table. 1).

The results determining strength and coordination – a medical ball throw for distance – differ significantly among the groups of actively engaged in sport and not actively engaged in sport, and those taking part in sports competitions only on the days of sport at their schools for the benefit of those taking part in training and sports competitions (Table 1). In the test of walking on a gym bench placed in its normal position and upside down, those actively engaged in sport are better at performing the test in comparison to the remaining groups (Table. 2).

The results convince unanimously that taking part in extra training and sports competitions positively affects the development of physical efficiency of people mentally impaired to a moderate and severe degree.

Table 3. Sports activity and social maturity of the patients in separate sections of Gunzburg's test.

As for basic activities of self-help section, one can notice a significant difference among the three groups of the examined people. There were shown dependencies between the sports activity achieved by training and participation in competitions and the level of self-help. The average number of points achieved in Gunzburg's test in the self-help section, as for all the activities in the group of the people actively engaged in sport, exceeds considerably the average values in the group of those taking part in sports competitions only on the days of sport and in the group of the youth not actively engaged in sport.

In the case of people actively engaged in sport, all the examined functions of communication with the external world, expressed by the average number of points achieved, are higher than the average results in the remaining two groups of the persons.

In the socialisation section, the assessment expressed by the number of points achieved is considerably lower in the part of not actively engaged in sport as compared to the people in the remaining two groups. The examined in the group of people actively engaged in sport differ significantly in socialisation from the remaining persons, both those who did not participate in sports training and competitions and those who took part in sports competitions only on the days of sport. The average number of points achieved in the group of people actively engaged in sport in the section of occupation exceeds considerably the average number of points achieved in the remaining groups of the patients.

The overall result of Gunzburg's test was the most favourable in the group of youth actively engaged in sport. They achieved the best results in basic activities of self-help and communication, while the results of the people actively engaged in sport only on the days of sport at their own schools were slightly worse, and the lowest social maturity was presented by the examined who were not actively engaged in any sport (Table 3).

There were indicated statistically significant differences between the people actively engaged in sport and those who were not active in sport as for all the tasks in Gunzburg's social maturity scale.

Based on the results achieved, one may conclude that although the young people under the research were trained towards physical efficiency and participation in sports competitions - not towards socialisation, communication, self-help or occupation - in their case sports training affected their social maturity additionally and significantly.

DISCUSSION

The study in social competence of people with learning disabilities was carried out mostly with the mentally handicapped to a mild degree. The possibility of active life in society in the case of people mentally handicapped to a moderate and severe degree was neglected or thought to be a failure beforehand (Gabler-Halle, et al., 1993).

Meanwhile it is thought that developmental possibilities of people mentally handicapped to a moderate and severe degree really exist and according to Sadowska (1995, p. 30), "the prospects of regular functioning of the mentally impaired in the society are much greater than the ones ascribed to them."

The social functioning of both mentally handicapped and healthy people is inseparably connected with the ability of communication. According to the results of the research carried out by the author of this paper and by the others, there is immediate, positive dependence between training and participation in sports competitions, and the function of communication (Bat-hae, 2001, McEwen, 1983).

The importance of self-help cannot be underestimated in human life. Trzaska (1999) says that mastering self-care in the case of the mentally handicapped "proportionally to the degree of impairment may cause difficulties, but it does not mean that it cannot be mastered." The research carried out showed that people active in sport, i.e. the ones who train and take part in sports competitions, achieved the best results in their self-help in the social skills test. Such good results were to a great extent obtained thanks to the competent, responsible people who organized trainings and competitions, and took care of the mentally retarded.

Participation in different sports events makes people mentally handicapped to a moderate and severe degree gain new experience which is later transformed into different notions, activities or real situations or things. In this way, the environment becomes real for the mentally impaired. For mentally handicapped people sport may and should be a means to creative time spending in which man can

become accomplished. A systematic participation in sports competitions or other forms of physical recreation has a positive impact on people mentally handicapped to a moderate and severe degree as a social group; it creates team spirit and teaches techniques of social life and of meeting new people. It also secures the need of active relaxation and aesthetic and cognitive experience.

Research driven among Czech and American competitors, starting in special olympiads, showed essential, affirmative influence of sport trainings and of participation in sport competitions on development of social competence of handicapped persons (Valkova, 1998, Dykens & Cohen, 1996).

As it was shown in the research of Marchewka and Dyrga (2000), the relations between physical and social development are not permanent and can be modified positively. Both physical and social skills can be improved through planned training which the above research results confirm.

PERSPECTIVES

In conclusion one may say that sport plays a special role in the rehabilitation process of the mentally handicapped. Participation in training and sports competitions may be recognized as a very pertinent revalidation method, resulting in the development of motor efficiency and social maturity of the mentally handicapped. Physical activity and sports training make the people who are mentally handicapped to a moderate and severe degree develop, and the society understands them better and accepts their needs. Sports competitions themselves are a precious and effective way of revalidation of the mentally impaired within the range of physical efficiency and social maturity are superb tool of social integration of these people with surrounding them healthy persons (Marchewka A. 1999).

Occasional participation in training and sports competitions does not affect satisfactorily physical efficiency and social maturity of the examined people, while careful training and sports competitions adjusted to individual possibilities become a revalidation programme improving physical efficiency and social maturity of the youth under examination.

REFERENCES

1. Bat-hae MA. A longitudinal study of active treatment of adaptive skills of individuals with profound mental retardation, Psychological reports [Psychol Rep] 2001 Oct; 89 (2), pp. 345-54.
2. Dykens EM., Cohen DJ. Effects of Special Olympics International on social competence in persons with mental retardation, Journal of the American Academy of Child and Adolescent Psychiatry [J Am Acad Child Adolesc Psychiatry] 1996 Feb; 35 (2), pp. 223-9.
3. Gabler-Halle D., Halle JW., Chung Y.B. The effects of aerobic exercise on psychological and behavioral variables of individuals with developmental disabilities: a critical review. Research in developmental disabilities [Res Dev Disabil] Sep-Oct;1993; 14 (5), pp. 359-86.
4. Gunzburg H. C. Progress Assessment Chart of Social and Personal Development (for Mentally Handicapped). Form 1. 12 th Edition. Birmingham, 1974a.
5. Gunzburg H. C. Progress Assessment Chart of Social and Personal Development (for Mentally Handicapped). Form 2. 10 th Edition. Birmingham, 1974b.
6. Marchewka A. Special Olympics and sports-recreative activities as a means to adaptation and social integration of seriously mentally handicapped persons. In: Sport in Rehabilitation of the Disabled, by Jan Ślężyński. Polish Association of Disabled People, Cracow; 1999; 351-354.
7. Marchewka A. Olimpiady Specjalne jako środek oddziaływania na sprawność motoryczną osób umysłowo upośledzonych. Medycyna Sportowa; 2000a; 7; 37-42.
8. Marchewka A. Czas wolny młodzieży głębiej upośledzonej umysłowo – uwarunkowania wpływające na aktywność pozaszkolną. W: Aktywność rekreacyjna, sportowa i turystyczna w różnych środowiskach społeczno-zawodowych – diagnoza i propozycje rozwiązań. Praca zbiorowa pod red. I. Kielbasiewicz-Drozdowskiej, M. Marcinkowskiego, W. Siwińskiego. Polskie Stowarzyszenie Naukowe Animacji Rekreacji i Turystyki, Poznań; 2000b; 307 – 317.
9. Marchewka A., Dyrga U. Uczestnictwo w olimpiadach specjalnych a rozwój motoryczny i dojrzałość społeczna młodzieży umysłowo upośledzonej w stopniu umiarkowanym. Fizjoterapia; 2000; 4; 8; 21-23.
10. McEwen B. An evaluation of the need of the long stay psychiatric patient for organised exercise, Australian journal of physiotherapy 29(6), Dec 1983, 202-208.
11. Petrie A., Sabin C. Medical Statistics at a Glance, Blackwell Science; 2000.

12. Sadowska S. Społeczne otoczenie jednostek upośledzonych umysłowo, a nowa formuła rehabilitacji. *Wychowanie Na Co dzień*; 1995; 7-9;30.
13. Trzaska L. Szansa i warunki niezależnego życia osób z upośledzeniem umysłowym w domu rodzinnym. *Remedium*; 1999; 9;1.
14. Valkova, H. The development of indices of motor competence and social behavior of participants and non-participants in the Special Olympics Movement, *Gymnica (Olomouc)*; 1998: 28 p. 53-60
15. Witkowski T. By podnieść poziom społecznego funkcjonowania osób z upośledzeniem umysłowym. Fundacja Środkowoeuropejskie Centrum Ekonomii Działania Społecznego – FŚCEDS, Lublin; 1997.
16. Ziemilska A., Skowroński W. EUROFIT Special – test dla sprawnych inaczej. *Wychowanie Fizyczne i Zdrowotne*; 1996, 3.

ABSTRACT

The research involved 94 persons, students of special training and educational centres or complexes of special schools, aged 16 - 22, with the average age of 17.8 ± 2.69 . All the persons under examination had a documented mental impairment to a moderate or severe degree, and their average IQ equalled 37.6 ± 4.29 , measured in the Terman-Merrill scale.

The author's objective was to find dependence between training and participation in sports competitions, and physical efficiency and social maturity of the people mentally handicapped to a moderate or considerable degree.

During the course of the research it was found out that sport plays a specific role in the rehabilitation process of the mentally handicapped. Taking part in training and sports competitions may be considered an extremely pertinent method of revalidation, causing the improvement of both motor efficiency and social maturity of these people. Sports training and competitions, well-considered and adjusted to individual capabilities of participants, become a revalidation programme developing physical efficiency and social maturity of the examined youth.

STRESZCZENIE

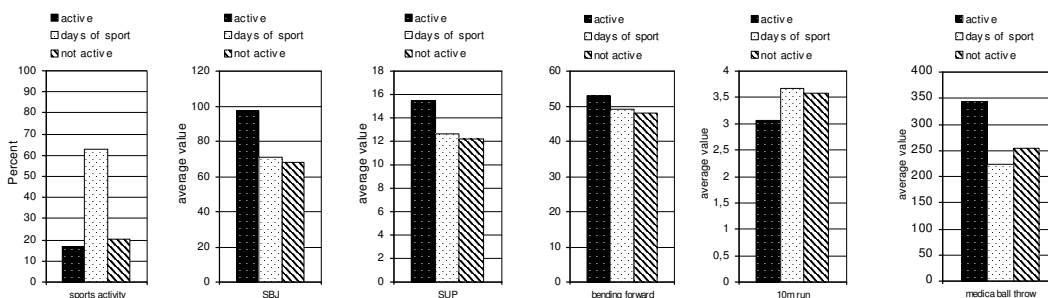
Badaniami objęto 94 osoby, uczące się w Specjalnych Ośrodkach Szkolno-Wychowawczych lub w Zespołach Szkół Specjalnych, w wieku od 16 do 22 lat, o średniej wieku 17.8 ± 2.69 . Wszyscy badani to osoby z udokumentowanym upośledzeniem umysłowym w stopniu umiarkowanym i znacznym o średniej IQ 37.6 ± 4.29 , mierzonej w skali Termmana-Merrill.

Celem autorki było znalezienie zależności między treningiem i udziałem w zawodach sportowych, a sprawnością fizyczną i dojrzałością społeczną badanych, upośledzonych umysłowo w stopniu umiarkowanym i znacznym osób.

W wyniku badań ustalono, że sport spełnia szczególną rolę w procesie rehabilitacji osób umysłowo upośledzonych. Udział w treningach i zawodach może być uznany za bardzo trafną metodę rewitalizacji powodującą poprawę sprawności motorycznej i dojrzałości społecznej tych osób. Przemysłany, dostosowany do indywidualnych możliwości trening sportowy i zawody sportowe stają się programem rewitalizacyjnym, usprawniającym, podnoszącym poziom sprawności fizycznej i dojrzałości społecznej badanych osób.

Table 1. Participation in sports competitions and physical efficiency - part 1

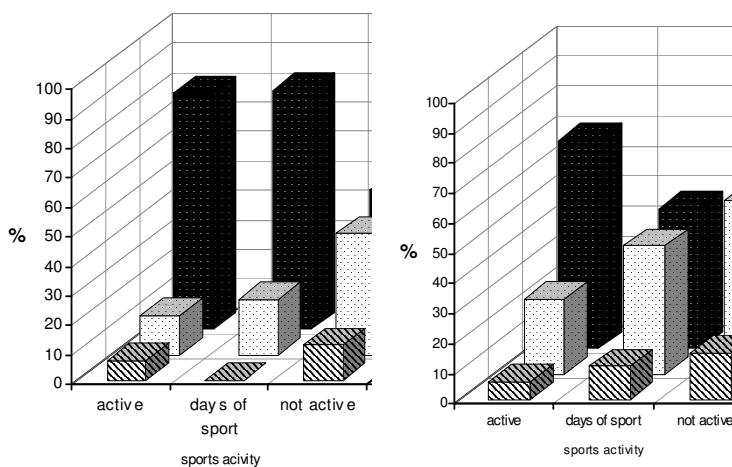
Sports activity	No of Patients		SBJ		SUP		Bending forward		10m run		Medical ball throw	
	N	%	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
active	16	17,0	97,47	40,06	15,50	4,77	52,94	9,31	3,06	0,74	342,66	162,38
days of sport	59	62,8	70,89	40,48	12,65	5,74	49,05	14,81	3,68	1,21	224,57	96,70
not active	19	20,2	68,13	45,71	12,21	3,74	47,94	10,22	3,59	0,83	253,50	131,96
F = test value			F=3,24		F=2,17		F=0,70		F=2,14		F=6,15	
p = significance level			p=0,0461		p=0,1205		p=0,4984		p=0,1235		p=0,0032	



Legend: active - actively engaged in sport
 days of sport - taking part in competitions only during the days of sport in their own schools
 not active - not actively engaged in any sport

Table 2. Participation in sports competitions and physical efficiency – part 2

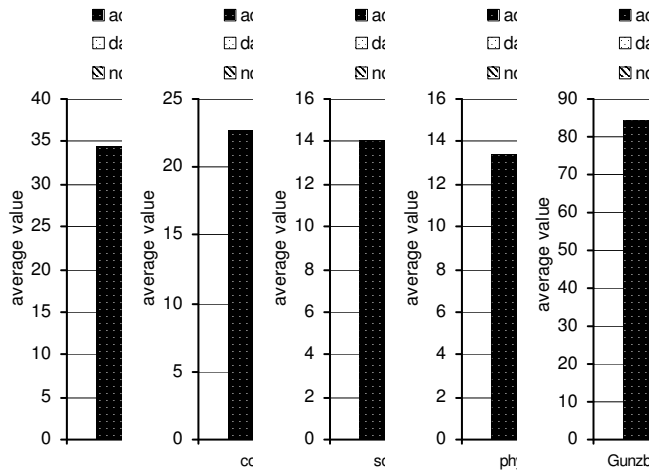
Sports activity	Walking on the bench placed in normal position						Walking on the bench placed in up side down position					
	Result 1		Result 2		Result 3		Result 1		Result 2		Result 3	
	N	%	N	%	N	%	N	%	N	%	N	%
active	1	6,7	2	13,3	12	80,0	1	6,3	4	25,0	11	68,8
days of sport	0	0,0	10	18,9	44	81,1	6	11,1	23	42,6	25	46,3
not active	2	11,8	7	41,2	8	47,1	3	15,8	11	57,9	5	26,3
chi2 = test value p= significance level	$\chi^2=11,85; p=0,045$						$\chi^2=6,30; p=0,1776$					



Legend: active - actively engaged in sport
 days of sport - taking part in competitions only during the days of sport in their own schools
 not active - not actively engaged in any sport
 result 1,2,3 - approaching a gym bench, supported walking on the gym bench, walking on the gym bench without touching the floor

Table 3. Sports activity and social maturity of the patients in separate sections of Gunzburg's test

Sports activity	Self-help		Communication-		Socialisation		Occupation		Gunzburg's test in total	
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
active	34,41	5,34	22,59	7,00	14,06	4,60	13,34	4,06	84,41	17,61
days of sport	30,55	6,73	21,78	8,23	11,90	4,85	10,86	4,43	75,10	21,93
not active	25,97	7,90	12,97	8,97	7,97	4,79	8,82	4,67	55,74	24,48
F = test value p=significance level	F=6,85 p=0,0017		F=9,13 p=0,0002		F=7,62 p=0,0009		F=4,56 p=0,0130		F=8,39 p=0,0005	



Legend: active - actively engaged in sport
 days of sport - taking part in competitions only during the days of sport in their own schools
 not active - not actively engaged in any sport