

**SYMPOSIUM**

# Anthropological studies of the disabled in Hungary

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**ABSTRACT** The number of disabled school children in Hungary is about 30-40 thousand per annum. This statistic is too high to be ignored. We are still collating the results of anthropological research on the disabled which has been completed or is still in progress in Hungary. Some of these studies also concern the subjects' physique. Comparing the results with earlier studies, the secular trend can be shown but only in the non-institutionalised groups. A longitudinal growth study of mentally retarded children has been in progress since 1974. At the end of their participation in the study the children have their physical abilities examined, with regard to their rehabilitation requirements. There is a cross sectional examination of children with learning disabilities focussing on visual acuity including colour vision, hearing loss, posture and laterality. All these studies are intended to increase the level of knowledge of professionals engaged in special education, and so to develop the expertise of special needs teachers. So, most importantly, we hope to serve the interests of our children in need.

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**KEY WORDS**

disabled children  
cross sectional examination  
visual acuity  
hearing loss  
posture  
laterality

There have been statistics recording the numbers of disabled children in Hungary since 1953. On average the proportion of disabled children is between 3 and 4%, which means some 40,000 schoolchildren annually (Buday 1975; Buday and Kaposi 1991). This number is too high to be ignored and the rehabilitation of those children is an extremely important task for doctors, special needs teachers and social workers. The number of mentally retarded children has grown in this period, partly because of changes in institutional care. The number of children with sensory deprivation has also grown, but to a lesser extent than that of the mentally retarded.

## The Past

For a long time special education in Hungary was interdisciplinary in nature. A notable feature of this was the connection with human biological/medical knowledge. The training of special teachers started in 1900 and in the first curriculum there was a subject named "Anatomy and pathophysiology of speech organs and sensory organs". The content of this subject has been taught under different names until the present day.

In the early days studies in this field were taught by physicians, who had hospital practices and who also gave lectures in the training of special needs teachers. The first department responsible for teaching this knowledge was founded in the early 1920s as the "Department of Pathophysiology and Pathopsychology" headed by Leopold Szondi.

Special education has always had an important link with research. Some of the earlier pioneers of special education were medical doctors and they carried out studies in their respective fields. Among others, we can mention Gusztáv Bárczi, Pál Ranschburg, Pál Roboz, Arthur Sarbó, János Schnell, and Leopold Szondi. Their studies were not only important in medical research, but also in the development of training in special education. We also have to mention some enthusiastic special teachers working in different institutions, who studied the growth, body development and also the physical fitness of the children in their care. Their results were usually published in yearbooks. Although they obtained their findings in a variety of ways which cannot compare with modern methods, their studies are still of interest to the special needs teachers of today.

## The present day

### Education

The Department of Pathophysiology at the College of Special Education was established in 1953. At present, the department offers the following medical subjects (Table 1). Different aspects of the anthropology of the disabled are taught in subjects number 4., 6. and 8.

### Research

### Viewpoints

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**Table 1.** Name and schedule of medical subjects.

Name	Number of Semester
1. Functional anatomy I.	1.
2. Functional anatomy II	2.
3. Pathophysiology (general)	3.
4. Ontogenesis	3.
5. Child psychiatry	3.
6. Special pathophysiology	4.
6.1. Pathophysiology of mental retardation	
6.2. Pathophysiology of speech	
6.3. Pathophysiology of visual impairment	
6.4. Pathophysiology of hearing impairment	
6.5. Pathophysiology of physical impairment	
7. Pathophysiology of central speech disorders	7.
8. Special school hygiene	7.

There are many different views of disabilities and disabled people in society. Apart from the views of non-professionals, which often tend to be intolerant, the views of professionals may differ widely, according to their profession. On the human biological side there is the syndrome, its aetiology, the pathological mechanism of the appearance of the symptoms, the epidemic aspects, etc. The medical view is supplemented by therapeutic considerations, in addition to the human biological ones. As most illnesses can seldom be cured or treated, medical help usually aims to analiorate the symptoms only. It is worth noting that mental disability may be mentioned among these symptoms, without regard to its severity, usually just as “retardatio mentalis” or “oligophrenia”. This means that mental retardation from the biological point of view is just one of the symptoms and not necessarily the most important one.

Psychological interest focusses on the impaired personality. One of its important features is intelligence, which is described by a number (intelligence quotient) in well-proven intelligence tests. The severity of mental disability is classified according to the results of these tests. The result of the most current tests is not only a quotient but it also shows the structure of abilities. The latter is of great importance, e.g. in the rehabilitation and employment of mentally disabled adults. Intelligence tests can be complemented by an examination of social abilities and other features of personality.

Special educators focus on one of the symptoms, for example the mental disability or hearing impairment, because its severity determines the strategy of early intervention programmes, education, and teaching. These features, obviously together with the results of the medical and psychological examinations, play an important role in a number of significant decisions, which in many cases affect the whole life of a handicapped person, such as education or employment.

As for other professionals, social workers, who focus on aspects of rehabilitation, and lawyers, who are interested in questions of accountability, are worthy of mention.

The anthropology of the disabled has always existed as an exclusively studied subject, and not only in Hungary. There are some departments working in this field, notably the Department of Anthropology at the University of Debrecen, (Debrecen), the Department of Zoology at Bessenyei György College (Nyíregyháza), and the Department of Zoology at Berzsenyi Dániel College (Szombathely).

We also have to mention the departments of human genetics of medical schools working on the aetiology of genetical disorders and different children’s clinics dealing with the cure of the disabled.

Human biological studies of the disabled select the examined persons usually on the basis of having same type of disability as a common feature and often do not even consider the severity of the disability.

This is due to the pressure of circumstances. In most cases, the aetiological background of the given case cannot be found from the available documents. Therefore aetiological classification is not possible except for some well known cases like Down’s syndrome. On the other hand, if we select according to severity, earlier signs of damage are generally found among the more severe cases.

It is important to mention that a change of opinion regarding aetiological background has occurred over the last few decades (Göllesz and Csabay 1972). In the 1940s, syphilis or heavy traumas were frequently cited as the aetiological background of severe mental disability. By the beginning of the 1950s these cases had disappeared, but then “status post meningitidem” and/or “status post encephalitidem” had appeared. It was at this time that it became possible to cure meningitis and encephalitis caused by microbes, but after recovering from the illness, mild mental retardation, epilepsy and personality changes often remained (Bárczi 1953). Although most of these illnesses can be cured today, there are cases when damage occurs earlier, therefore causing more serious impairment and not only in one area. In the previous decades multiple disabilities were exceptional cases, but nowadays they are becoming increasingly frequent. There have also been changes of opinion regarding the aetiological background of visual impairment (Méhés 1990).

As mentioned, the number of children with special needs is growing. These are not only the handicapped, but also children with learning difficulties, such as dyslexia, dysgraphia and dyscalculia. These latter deficiencies often appear when the primary school entrance tests are taken or in the first class. Earlier, the main reason for these symptoms was attributed to an injury in the three lobes (a part of the brain behind the fossa lateralis) or to POS (psychoorganic syndrome).

However, it has been recently recognized that pollution, primarily including the presence of heavy metals, can also be among the reasons. A current investigation has reported that in the blood of children living close to main roads with

**Table 2.** Median age at menarche of disabled girls.

<b>Visually handicapped</b> Blind	
practically blind	11.90 ± 0.27
visually impaired	12.20 ± 0.48
<b>Hearing impaired</b> Deaf	12.70 ± 0.25
hard of hearing	12.71 ± 0.62
- and mentally retarded	12.67 ± 0.98
<b>Mentally retarded</b> Mild	12.96 ± 0.65
moderately	13.34 ± 0.96
Down's syndrome	13.45 ± 0.48
<b>Control</b> Pantó és Eiben (1984)	13.09 ± 0.18
Farkas (1988)	12.79 ± 0.33
Bodzsár (1996)	12.89 ± 0.12

heavy traffic 15 g/100 ml lead was found, instead of the recommended 0 g/100 ml. The clinical symptoms of pollution cannot be proved, because the amount is not high enough for that. But the heavy metals disturb the biochemistry of the neurotic cells and while the enzymes for cell metabolism are missing, they cannot be expelled from the organism.

The majority of children in these areas are so-called children with multiple disadvantages and most of them attend special schools. This is not necessarily due to low intelligence level, but because there are no other schools for children who cannot follow the primary school curriculum at the required speed and this is also the case of children with partial disabilities.

This is remarkable because twenty years ago we understood "environmental harm" to mean harm caused by poor socio-cultural background. It is still understood this way in most pedagogical and psychological literature.

## Goals

It is an especially interesting and important question for human biologists dealing with growth, how the different syndromes effect growth and body build. The main problem of studying this question is that one can only collect a sample, large enough for a statistical analysis, from very few syndromes. It is important that the description of the rare syndromes should contain some often neglected details, such as the body measurements or dermatoglyphics, even without detailed comments. Then, by collecting all this data, we could get closer to solving the question, although probably only the next generation will benefit from it.

Another shortcoming is that while data on the growth of the mentally disabled is available, none has been collected on the growth of visually impaired, hearing impaired and physically disabled people. It is a pity, because a number of important results may be expected from among these people, especially concerning build.

There are also some practical goals. The importance of anthropological examinations is reinforced by the fact that most adult disabled persons does some sort of physical work, except for a smaller group of hearing impaired, visually

impaired and physically handicapped people. For the majority, occupation is an essential element of their quality of life.

The early intervention programme (and all special teaching activity in general) has a more distant objective as well, that of rehabilitation (Göllesz 1985). For adult disabled people in employment, it is of vital importance whether their body build and physical abilities are suitable for certain jobs. Structural changes taking place during growth can be detected and controlled through examination and analysis of body size. The development of physical capability is a task incumbent upon those who live and work with the child, especially the special needs teacher. Their body build and physical fitness are fundamental factors, influencing success at work.

Work is especially important for them, but not because as was thought and even written in the 1950s that by working they contribute to the costs of their subsistence and thereby reduce the expenses of the society. Today we give much more importance to the fact that, without occupation, their rehabilitation cannot be considered complete. Naturally a child on an early intervention programme will more likely acquire the stamina necessary for work if his movement training has not been neglected. Work performed happily would assist him in achieving a fully meaningful life, thus contributing to the improvement of his quality of life, which is so often talked about today.

## Research

One of the earlier studies on the body measurements of children in Hungary was published by Szondi (1929), titled "The body measurements of pure fate children". Later on he dealt with the inheritance and constitution of stutterers. Other works were the first in Hungary to deal with the cure of mental retardation (Szondi 1927) or the constitution of the mentally retarded (Szondi 1931).

It is important to mention here that in those times the definition of "constitution" was not the same as today. It was much closer to the present definition of "personality" than one of "physique" (Buday 1993). Reading his works, we have to take this fact into consideration.

Regarding the growth of the mentally retarded, the cross sectional studies clearly indicate that

- their mean body measurements are less than "normal" schoolchildren but statistically the differences are seldom significant;

- the standard deviation of these means is higher than that of the "normal" one (Szilágyi 1968), because the group is not aetiologically homogenous;

- the body build of the children may often be out of proportion, due to differing body-part measurements (Buday and Kaposi 1989, 1988; Tóth 1993).

There are some cross-sectional growth studies of mentally retarded children in Hungary. Most of them focus on

regional growth characteristics and are often completed for some other purpose, such as sociological studies or medical examinations (Szilágyi 1968a; Buday 1974; Szabó 1982, 1990, 1986, 1982; Szabó et al. 1992; Nyilas 1993; Szabó and Nyilas 1996). Some of them have practical goals as the correction of dental anomaly (Nyilas et al. 1992; Bakó et al. 1993).

These studies not only concern the growth of the body, but also the growth of the head (Horváth 1962; Szilágyi 1968b; Nyilas et al. 1992; Gárdos et al. 1995; Jubert et al. 1995). These are very important because developmental disorders of the skull are very frequent among mentally retarded persons.

The cross sectional growth study of visually impaired children has been finished. The data was evaluated in two groups: those with low vision and the blind in one group and partially sighted children in the other (Buday and Kaposi 1995). The visually impaired children were found to be as tall as the children in the control group but their widths were narrower, the girths of extremities were less and they were heavier. It is well-known that visual impairment involves a special way of life including little physical activity and therefore less muscular development. This tendency seems to correspond to the severity of impairment (Buday 1998).

The cross sectional growth study of hearing impaired children has also been finished but we cannot evaluate the results yet.

The longitudinal growth study of mentally retarded children has been in operation since 1973 in one of the biggest institutions for mentally retarded children in Hungary. All the children have been measured twice a year. Children have been separated according to the severity of mental retardation into two groups: "children with a learning disability" and "children with a mental disability".

The children were also tried to be selected according to the aetiology of mental retardation, but it was not very successful. Today, we have the following four groups:

- Gametopathia. This group contains some children with Down's syndrome and some with undifferentiated aminoacidurias.
- Children with chiemopathia and peri - and postnatal damage.
- Multifactorial-familiar. This group contains children with learning disabilities.
- Unknown.

At present their individual growth curves are being analysed. Some of the results have already been published (Buday and Kaposi 1986, 1989).

This study was completed by examinations of the children's physical fitness. We employed the EUROFIT test which had never been used with mentally retarded children. The first results have already been published (Barabás and Buday 1997).

Studying the median age at menarche of girls with sensory deprivation and mentally retarded girls including Down's syndrome (Table 2) we found that the median age of blind girls was the earliest from the data available in Hungary. There were no significant differences between the partially sighted or hearing impaired girls and the "normal" control (Buday 1981). The mentally retarded girls and the girls with Down's syndrome have the highest medians (Darvay and Szilágyi 1983) and their confidence limits are the widest (Buday 1990). Studies concerning the median age at menarche of girls with sensory deprivation were repeated ten years later and the results were similar.

It would be unrealistic to imagine we could draw definitive conclusions regarding the growth, body development and physique of children with sensory deprivation here in Hungary with such limited numbers of subjects. But we hope to arouse our colleagues interest in studying this issue.

The puberty of mentally retarded boys seems to be delayed with a wide range of personal variation. This study is based on our evaluation of the distribution of their body height and weight (Buday and Kaposi 1996; Buday 1997).

The study of growth, body development and physique of people with Down's syndrome has also been completed (Horváth 1960; Horváth and Buday 1980a; Buday and Eiben 1982; Buday 1984; Szilágyi 1995). The largest study was a cross sectional one of a relatively large sample of Down's syndrome persons (Buday 1990). It was found that diagnosis of Down's syndrome is possible based on the discriminant analysis of body measurements only. This is not important from a practical point of view of course but the characteristic of their body measurements is remarkable (Buday and Kaposi 1989,1990; Buday 1990).

In connection with this work we can highlight the atlanto-axial instability which is of fundamental importance when considering the physical education of these children (Buday 1994).

There was no longitudinal growth study in Down's syndrome children except a small work (Horváth and Buday 1980a, 1980b). Now we have some new data on the growth of children with this syndrome. The pattern is smaller, but the data is longitudinal.

The secular trend of the growth of non-institutionalised mentally retarded children could be shown, comparing the above mentioned data of Szondi with the unpublished data of Eiben (Czeizel et al. 1978) and some new data. No secular trend was found among the institutionalised children (Szabó et al. 1992), probably because the living conditions inside institutions have always been quite adequate in Hungary, and, while having improved somewhat in the last few decades, have not been subject to such dramatic changes as have the home environments of non-institutionalised children.

We could also confirm the findings of Hoshi et al. (1978) that the secular trend cannot be shown among the Down's



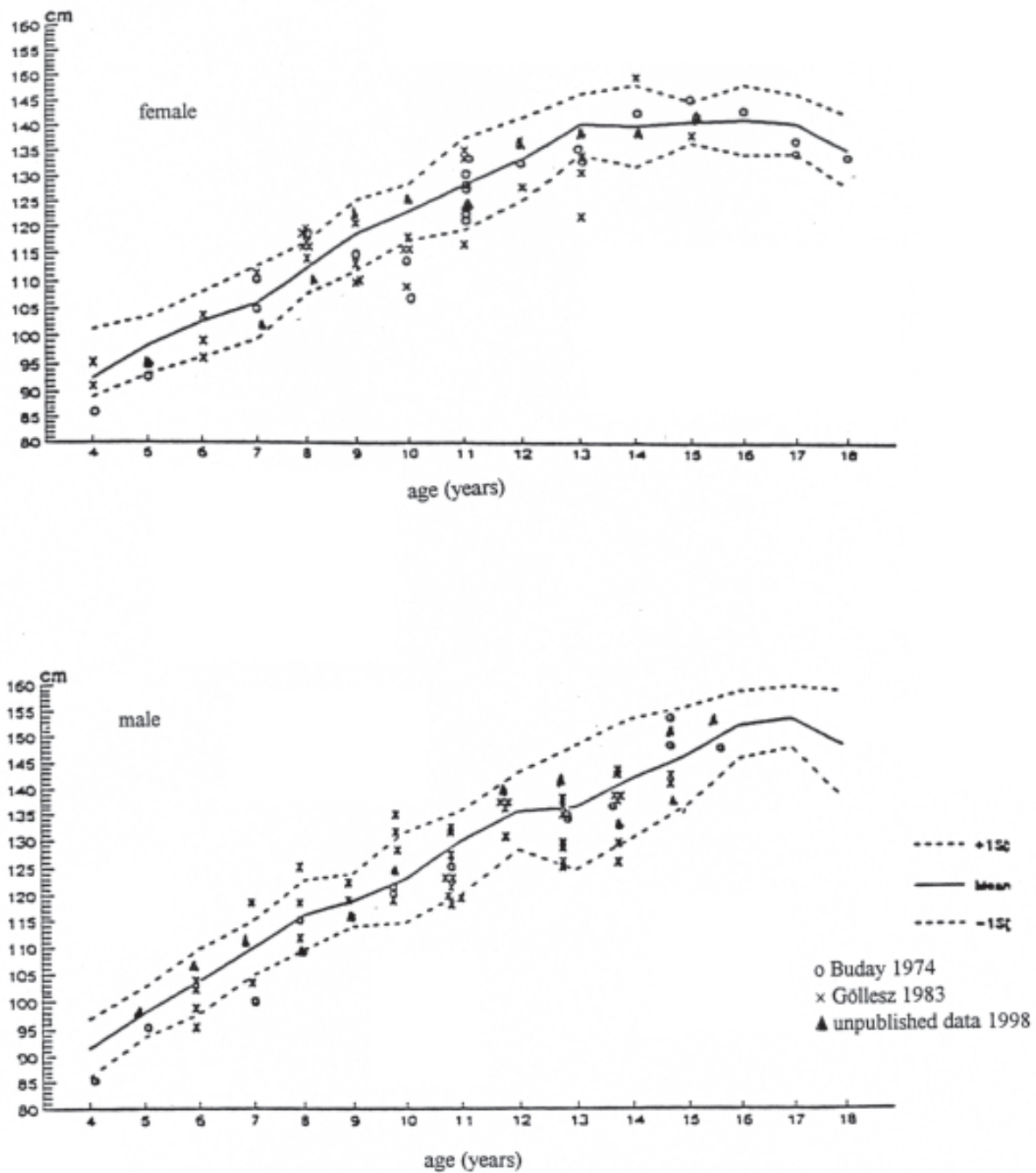


Figure 1. Secular growth changes in Down's syndrome

syndrome patients (Fig. 1.) The means and standard deviation of body height of children with Down's syndrome (Buday 1990) were compared using the personal height data from the studies of Göllesz (1963), Buday (1974) and some new, but unpublished data. Most of the personal data falls into the mean $\pm$ 1SD or below this zone, and the height of only 4 boys and 4 girls are over the upper limit. It is remarkable that some

other body measurements (weight, sitting height) have also been compared with the same results. Secular growth change cannot be detected in Hungarian Down's syndrome groups which corroborates the observations of Hoshi et al. (1978).

The dermatoglyphics of mentally retarded children have also been studied in Hungary. The Breitman score as a method of diagnosing Down's syndrome based on der-

matoglyphics was modified by Horváth (1969). There have been noteworthy publications about the characteristics of dermatoglyphics of different aetiological groups of mentally retarded children (Szilágyi 1965, 1976; Szilágyi et al. 1970, 1987; Vetró et al. 1973; Buday et al. 1978) and it is a pity that these publications are not available at present.

Also some results from the data processing of dermatoglyphical and anthropological data have been published (Buday and Perge 1980; Kaposi and Buday 1985).

Learning disability and other lack of partial ability such as dyslexia can be aggravated or even caused by visual and/or hearing loss. There is a possibility of some clinically insignificant problem of visual or hearing perception. Learning problems can be caused or can become more serious by loss of visual perception, hearing loss primarily, in the speech frequency range or any kind of orthopaedic problem. There is an empirical connection between the left handed or inconsistent hand dominance and learning disability. The unexpressed dominance may have indirect influence on learning: uncertain orientation of left and right side may be caused by inconsistent preference of one hand.

In our subjects, there is no significant difference between the boys' and the girls' handedness. About three quarters of the pupils are right handers, which is lower than that of the Hungarian primary schoolchildren's. The ratio of left handers is somewhat higher. There is no connection between the handedness and the age of children.

There is general tendency on the consistent dominance when the preferred hand, leg and eye are on the same side but any other patterns are also possible. Almost all the righthanded persons preferred their right leg, and half the lefthanders are also rightlegged. Consistent dominance was found in about half our subjects. The next frequent combination is the so called opposite side: when the preferred hand and the preferred eye are not on the same side. This situation is more frequent among the girls than the boys: 43.6% and 38.8%, respectively (Buday and Kaposi 1997).

This study is not finished yet. But after examining more than one thousand children we can make the following recommendations:

- screening examinations of sensory and motoric organs for children with learning disabilities should be conducted just before they reach school age;
- screened children should undergo clinical examinations, to verify the results of the screening test, and to arrange the necessary correction/aid;
- parents and teachers should ensure that children with glasses or hearing aids actually wear them. They also should ensure that the children participate in curative gymnastics programmes;
- the relative size and power of hearing aids and glasses should be checked periodically, in accordance with the child's growth;

- further examinations will be required to follow up changes in the child's medical condition, physical and educational development.

## Future

There is still much to do in the future. The following tasks lie ahead of us:

- to continue the cross sectional growth studies;
- to study the socio-cultural background of the participants in the cross sectional growth studies;
- to conduct clinical, biochemical examinations to discover the aetiology of mental retardation;
- to finish the longitudinal growth study;
- to continue the complex examination of children with learning disabilities;
- to study the correspondence of early intellectual and motor development to contribute to theoretical basis for early intervention programmes;
- to study the correlation between the psychological, social age and the biological age to ascertain whether the child falls into the category of being mentally retarded or having a mental disability.

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