University of Health Sciences in Bydgoszcz

HUMANITIES DIMENSION OF REHABILITATION, PHYSIOTHERAPY

Edited by

Wojciech Hagner
Krystyna Nowacka
Walery Zukow

Bydgoszcz 2012

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Content:

Introduction

We hope that a varied program of the monograph will answer your expectations. We believe that the monograph will contribute to raising the knowledge, skills and abilities of doctors, therapists, physiotherapists, nurses, psychologists, biologists, researchers, practitioners and health workers interested in rehabilitation, physiotherapy, tourism and recreation.

Monograph, corresponding to the modern challenges of global health specialists collect articles from those areas of the leading centers of renowned foreign and domestic. Many of them present state of art in their field. This will be particularly valuable for young doctors in the specialization, and students.

Welcome to familiarize yourself with this issue all relevant hazards and health, life and safety at work in tourism, recreation, rehabilitation, physiotherapy, nursing organization to work safely and missions in these conditions, the influence of environmental conditions on public health.

Authors from abroad and the country will present an overview of contemporary challenges and solutions in these areas. The issue concerns the text of the wider work for human health, tourism, recreation, physiotherapy, nursing, wellness and rehabilitation, including the economics of health care.

EFFECT OF ANTHROPOPRESSURE ON THE POPULATIONS OF TICKS *IXODES RICINUS* (LINNAEUS, 1758) (ACARI: IXODIDA: IXODIDAE) IN DIFFERENT ENVIRONMENTS IN TERRAIN OF THE MAŁOPOLSKA AND MOUNT ŚLĄSK

Wpływ antropopresji na populacje kleszczy *Ixodes ricinus* (Linnaeus, 1758) (Acari: Ixodida: Ixodidae) w różnych środowiskach na terenie Małopolski i Górnego Śląska

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Key words: anthropopressure; tick; seasonal activity; epidemiology; vector of Lyme borreliosis; life cycle; *Ixodes ricinus;* Linnaeus; 1758; Acari: Ixodida: Ixodidae; Małopolska; Mount Śląsk.

Słowa kluczowe: antropopresja; kleszcz; sezonowa aktywność; epidemiologia; wektor Limy boreliozy; cykl życiowy; *Ixodes ricinus;* Linnaeus; 1758; Acari: Ixodida: Ixodidae; Małopolska; Górny Śląsk.

Abstract

In the years 1999-2001 was research on the prevalence, the incoming activity and tick Ixodes ricinus common in the forests of Małopolska and Śląsk. The test was on 3 positions remaining in varying degrees under the influence of antropopressure. Ticks collected before using the flag flannel on a 100x60 cm, which was swept surface of the bedding, fleece forest and plants to a height to 1 m. Found differences in quantities of ticks, the percentage of various forms of development on a test positions and clear differences in the activity of the annual peaks, with differences in a single position on the space of 2 consecutive years, the studies were small and insignificant statistically. It was noted that the conditions posed by the man in the vicinity of their habitat not only adversely affect Ixodes ricinus, but also often posed are favourable conditions for this species. The presence of Ixodes *ricinus* in the vicinity of human habitat threatens epidemiological for residents of these areas, the persons residing there for recreation as well as for domestic animals and wildlife.

Streszczenie

W latach 1999-2001 prowadzono badania nad występowaniem, liczebnością i aktywnością kleszczy pospolitych *Ixodes ricinus* w lasach Małopolski i Górnego Śląska. Badania prowadzono na 3 stanowiskach pozostających w różnym stopniu pod wpływem antropopresji. Kleszcze zbierano przy wykorzystaniu flagi flanelowej o wymiarze 100x60 cm, którą omiatano powierzchnię ściółki, runa leśnego i roślin do wysokości ok. 1m. Stwierdzono różnice w ilości kleszczy, procencie poszczególnych form rozwojowych na badanych stanowiskach i wyraźne różnice w szczytach aktywności rocznej, przy czym różnice dotyczące pojedynczego stanowiska na przestrzeni 2 kolejnych lat badań były niewielkie i nieistotne statystycznie. Zauważono, że warunki, jakie stwarza człowiek w pobliżu swoich siedlisk nie tylko nie wpływają niekorzystnie na *Ixodes ricinus*,

ale dodatkowo często stwarzane są warunki dogodne dla tego gatunku. Występowanie Ixodes *ricinus* w pobliżu siedlisk ludzkich stwarza zagrożenie epidemiologiczne dla mieszkańców tych terenów, osób przebywających tam w celach rekreacyjnych jak też i dla zwierząt domowych i dzikich.

Introduction

The huge role the epidemiological arthropods is commonly known to man for centuries. However, only improve the techniques of research in the 20th century contributed to a significant increase of resource knowledge concerning zoonoses and calling them micro-organisms. The widespread use of arthropods in the immediate vicinity of humans, the frequency of contacts in the place of residence and recreation and at the place of work is pushing us to the interest of this group of systematic, with particular regard to the species involved in the transmission of pathogens. Still a growing number of reports about the pathogenic role of and consequences of free-riding arthropods indicates the relevance of the research on morphology, biology and ecology of arthropods, and also of the importance of epidemiological. Know the course of embryonic development and beyond embryonic of arthropods, and their ecological requirements governing from spreading, and also of the activity of the diurnal and seasonal, may contribute significantly to limit their role in the chain of epidemiological disease transmission.

In Poland, the largest of the arthropod parasite assign ticks (Ixodida). Due to the ubiquity of the presence, the wide geographical spread and the importance of medical and veterinary mites, these shall also be regarded as one of most arthropods parasite throughout the world. Of Europe, including the Polish species, the greatest importance is assigned ticks one Ixodes ricinus.

Ticks are hematological phagical, unconditional parasites of terrestrial vertebrate animals. There are in all geographic regions of the world, excluding only the circumpolar areas. Are responsible for the circulation and keeping in nature numerous pathogens - viruses, rickettsiae and other bacteria, protozoa, worms and fungi causing many diseases of man and animals.

Moving and keeping the population in the claws of pathogens of disease transmission is only one of many of the threats posed by these arthropods. Ticks, adversely affect the host is stinking up the toxins introduced together with saliva during feeding, which can lead to shocks forceps (8). In turn, other, biologically active substances contained in the salivary respiratory, may cause allergic reactions, including anaphylactic shock (16, 35). In Polish there was a case of death as a result of this type of reaction of the human body after the attack mean a tick (4). It is estimated that among all arthropods parasite, ticks cause greatest losses in world farming. Outside the toxicosis, during the many invasions may cause hemolytic due to the loss of large amounts of blood of the host. Contribute to impeding the proper development of animals and to reduce the production of milk and

meat. In addition, damage to the skin (11) arising during the feeding tick can lower the quality of the leather, which are the raw material for industry, fur and leather.

Of ticks found in Europe, the largest medical and veterinary is Ixodes ricinus - *Ixodes ricinus* (Linnaeus, 1758). The growth of research on this species occurred after World War II. A specific increase in the interest ticks one in recent decades is due to the fact the identification of numerous pathogens carried by this species.

Materials and methods

From 1999-2001 she had a set of claws of outside the nest, from early spring to autumn. Purpose of the work was to investigate the occurrence, abundance and activity of the tick Ixodes ricinus (Linnaeus, 1758) in environments of varying degrees of anthropopressure.

Over the 3 years I downloaded 85 attempts from three various posts of varying degrees of degradation in Małopolska (las suburban subdivision Rżąka: Kraków, a Szarów wilderness Niepołomicka) and Upper Silesia (las suburban: subdivision Ochojec in Katowice, Poland). In the downloaded samples were found including 5771 individuals. All of the positions have similar surface. 500 m^2. To a set of claws, the microorganism in this type of research method of flagging. Flag flannel dimensions 100x60 cm swept low layers of vegetation and surface of the ground. Field studies are performed, on average, at intervals of 2-week period of activity of this species. Derogations from the abovementioned date associated with the notable shortcomings for a set of claws of weather conditions. While driving a set of claws arrange uniformity of sampling time. Time flagging close in range from 1 to 1.5 hours. In order to eliminate the errors arising from differences in the activity of diurnal mean a tick presented a collection of material were fixed-time, equal for all posts, ie. approximately 15.00 hours. In years 1999-2001, which a study has been carried out were similar in terms of weather conditions throughout the calendar year.

Discussion

During these tests of the harvested material found only one of the ticks that occur in Poland, namely *Ixodes ricinus* - the most common domestic species, while at the same time play the largest role in the epidemiology of disease transmission. The fact of only that species in the whole of the material is undoubtedly Influence the method used to raise the material, ie flags. Research was dependent on a set of outside the nest ticks. Not penetrated nests and burrows. Not collected ticks before or harvested from wild-living animals.

Testing multiple authors (among others 32, 34, 18, 19, 20, 31) have shown that the periods of seasonal *Ixodes ricinus* may differ in different geographic regions and they depend on conditions

on the ground, the climatic conditions. And so, in the South of Europe, period activity seasonal is longer and shorter life cycles. The length of the period of activity is in populations of inhabiting in the northern parts of the range. *Ixodes ricinus* has one or two peaks of activity is seasonal. In warmer climates, for example. in the Mediterranean there is one peak year activity of ticks. In the northern areas of the range of the Ixodes ricinus shows activity from spring to autumn with two peaks: spring and autumn. In the extreme north of the outer positions (Karelia), Ixodes ricinus in mountain areas, for example. in Switzerland is active only during the summer, and there is no spring and autumn peaks of its activity. Scotland nymphs and as adults are active throughout the year with a clear peak in the period from March to May (41).

In Polish there are two peaks of activity seasonal – spring and autumn (1, 5, 6, 7, 8, 9, 10, 11, 13, 14, 17, 21, 22, 23, 24, 25, 26, 29, 33, 37, 38, 39, 40, 42, 43, 44, 45, auct.). The seasonal activity of *Ixodes ricinus* begins in late April and May, and ends with the beginning of November (27, 28, 39) with two peaks, in May and September. After hot years, however, may not be peak autumn (17, 39, 40, 36, 14). Annual peak may not occur or may be poorly selected after the cold and rain during the summer period (25).

In the South of Poland increased activity of hungry nymph and imago *Ixodes ricinus* is the general nature of the double peak, from the end of April with the maximum in May and from mid-August to the beginning of November, with a maximum at the beginning of September. In spring the number of active ticks is significantly greater than in the autumn.

At the time of research out there, however, the differences in the seasonal activity of ticks on test stations. Spring activity began at the earliest on the bench at Rżąka in Kraków, Poland, since April. The latest spring activity ticks began in Katowice (May). In Szarow spring activity played between April and May. For all positions, the beginning of autumn peak activity ticks coming due in the second half of August. For the attention of 2000, in which there was a significant discrepancy regarding autumn peak activity ticks in relation to observations from other years in the case of a position on the Rżąka there has been a significant offset of the second Summit of activity on the summer months and its considerable extension. As in Katowice was observed an increase of activity of ticks twice in autumn: in the second half of August and the slight increase in the first half of October. Summer months of the year were characterised by amazing rain (discharge of the Vistula in July 2000). This season was preceded by a relatively mild winter. In other cases, the relatively brief, because only 1-2 weekly peak activity of ticks in the autumn, dictated was probably extremely hot and dry periods of summer and it can be observed after the first step rainfall and lower the temperature, and thus the more favourable conditions for the development of the microclimatic ticks.

As mentioned in the literature concerning activity of ticks you can find information that *Ixodes ricinus* has two peaks of activity – spring and autumn (1, 5, 6, 7, 8, 9, 14, 17, 21, 22, 25, 26, 29, 33, 37,,40, 42, 43, 44, 45, auct.), however, the results suggest that a more appropriate would be to apply for the second Summit of the term summer-autumn or even late summer because it usually was on in the second half of August and often ended before the arrival of the autumn calendar.

There was also a diverse course activity, seasonal of individual forms of development. Obtained data does not derogate significantly from those which we find in the literature of the subject (1, 5, 6, 7, 8, 9, 10, 11, 13, 14, 17, 21, 22, 23, 24, 25, 26, 29, 33, 37, 38, 39,40, 42, 43, 44, 45, auct.). The exceptions, however, and the fact that requires special attention was catching live larvae on the bench in Katowice Ochojec already in March.

All stations have different size and activity are detected in two consecutive seasons. This situation is most likely related to abiotic is humidity, temperature and one. After a mild winters vise became active earlier; after hot from second peak activity was smoother, more saturated or difficult to see; after the damp is more pronounced; the activity of ground to a halt later in the period with a mild, warm autumn. Multiannual observations tend to propose the hypothesis that with constantly changing climates in a warmer climate we may expect year round activity of *Ixodes ricinus* in the environment. However, this is far from the larger hypothesis, requiring in-depth research. Undoubtedly, however, this situation is possible. It should be remembered that active ticks were caught culled aurochs in the Bialowieza Forest in freezing temperatures and snow cover residual (47).

Significant differences in the prevalence and population *Ixodes ricinus* in the individual test stations. Most ticks occur in Katowice on Ochojec nature reserve. Collected before there in subsequent years of research on average 138,7 and 133,6 individuals in 1 trial. Least ticks collected at the Rżąka in Kraków, namely 24.3 and 16.5 individuals at one trial in two consecutive seasons, growing. The position in the Szarow Niepołomicka Forest these figures averaged 87 and 96,1 individuals in 1 trial.

On the individual stations were also different percentage of various forms of development in whole harvested material (seasons research on a single position, these figures were similar and the differences were not statistically significant). The view group clearly prevailed larvae, the successive stages of development was small (only about 50 individuals mature within 2 seasons research). In Kraków on Rżąka percentage share of each life stage development in the whole of the collected material was similar. The position in the Szarow Niepołomicka Forest number of larvae on a number field, nymphes, and this in turn over the number of ripe. Such a situation has undoubtedly affected the possibilities for each life stage development in the next, the conditions for

the development of eggs in the environment, the conditions which have claws at diapause. In Katowice Ochojec these conditions were the worst – the surface soil places free from was not only the fleece, but litter, which undoubtedly limited the survival winters by juvenal forms. While the thickness of litter in the forest railway at Rżąka had the places of tens of centimeters in thickness. This situation poses a paradox – in an environment that was the best availability of hosts there were the worst conditions for the development of the ticks. While on the bench, where the availability of hosts was the worst were the best conditions for the development and survival are detected in a situation of disadvantage for them, the climatic conditions.

In a sample of 17.04.2000 of peri-urban forest in Rżąka in Kraków has been nymph, in which it was anomaly for you build the body of the absence and the right leg. In addition, this position saw the specimens with changes within the structures of the chitin (charts abdominal and dorsal discs).

Anomalies chitinous within the structures of ticks and atrophy of their legs found in collections may be due to chemical agents. It is difficult to determine clearly the cause of the changes of the teratology of specimens found in the wild because of the interoperability of many environmental and biotic factors interfering with physiological processes ticks in different stages of their life cycle. Laboratory studies indicate disturbances in the course of embryogenesis caused by humidity and changes of temperature (8) and acaricides (30). Experimental studies have shown the impact of heavy metals (cadmium, zinc, antimony) and acaricides on the oogenesis, the reduction of the number of eggs by the female, Decreasing the survival of eggs and larvae (14, 15, 30).

The cause of formation of anomalies legs with claws can be disturbances in the embrional development, the adverse conditions The molting, injuries and invalid regeneration (15, 37). Significant Influence on the phenomenon of reclamation are juvenile hormones control the transformation processes (2, 3). Malformations may also appear at the claws of hatched from eggs deposited by female feeding on resistant hosts (4, 7, 15).

Conclusions

On the basis of the results obtained confirmed the close correlation between human activity and the conditions of the local population of these dangerous parasites. Observations made during field studies and the results obtained allowed to draw the following conclusions:

1. Research has shown that the ticks, *Ixodes ricinus* , are widespread in areas of varying degrees of anthropopressure. They occur even in post under the great influence of the chemical and physical factors related to industry and the economy. Changes in the environment (artificial heat source,

changes in the level of water, dust emissions), pose specific conditions-climatic in habitats, causing the transfer of posts are detected in the direction of the conurbations.

2. The stations - Kraków-Niepołomice and Szarów-Katowice-Ochojec density of population and activity of the tick *Ixodes ricinus* differ. Least ticks and the biggest change in the dynamics of the seasonal activity was found on Rżąka, in the vicinity of the construction of the ring road Krakow-Katowice restricting migration of hosts for ticks. To deploy claws, artificial sources of heat and pollution particulate emitted from industrial facilities, determines access to the host.

3. The differences in the structure of the population of the tick *Ixodes ricinus* on test stations are due to the effects of anthropogenic factors affecting variation of conditions in these habitats, mites, and changing the size and composition of hosts. The biggest deviation from the correct structure expressing much the large percentage of larvae (86.9% - 90,6% of harvest) appeared in Katowice-Ochojec, where there are the most advantageous temperature conditions ("islands of heat") and humidity, is a good access to the host, however, remains the worst conditions for the lodging and the development of eggs, transformation and survival of the diapause period. This is related to the quality and the quantity of litter and the fleece, which thickness affects the survival of critical periods in the development of the ticks.

4. Changes in the population and activity of *Ixodes ricinus* in different positions, indicate a need for continuous monitoring necessary to develop methods of prevention in tick-borne diseases. Particularly important are the observations in environments with highly anthropopressure owing to the large displacement of periods of activity and interference in their dynamics, and changes in the abundance of individual character development.

5. The large numbers of ticks *Ixodes ricinus* affects lightweight and short winter, heat and moist spring and autumn heat. Warming recorded in recent years, the benefit will increase the number of ticks and may also cause an increase in incidence of tick-borne disease.

6. Tick *Ixodes ricinus* usually have two peaks of activity seasonal. The emergence and the amplitude of the first (spring) and second (summer-autumn) peak or the lack of a second Summit depend primarily on the weather conditions.

7. The activity of the claws of the longest was for Rżąka is in the environment have, closest to the city. The first active individuals fished were the beginning of March, the last in November. In the environment far situated from the city, strongly cooler, ticks, appear approximately 2-3 weeks later and similarly is approximately 2-3 weeks earlier than Rżąka their activity in the environment. As in Ochojec caught in March live larvae which were not previously described in the literature topic.

Summary

Data on activity and population ticks and their placement in individual habitats are important for predicting the risks of epidemic. High density population increases the risk of ticks attack human and animals, accompanied by the possibility of transmission of pathogens.

Importance in the epidemiology of tick-borne may have social change. Earlier transition to retirement, the impoverishment of the population and the Increase in unemployment can cause more frequent visits to the forest by the inhabitants of cities and villages (collection of fruit forest undergrowth "for pleasure" to pensioners, or for commercial purposes by the unemployed.) The results of the analysis of the demographic of patients hospitalized due to Lyme disease in the Clinic of Infectious Diseases and Neuroinfections AM in Białystok and from the Areas of Tarnobrzeg Special Economic Zone (SEZ) indicate on the socio-economic changes among sick (46).

Despite adverse environmental many human activities also reported by songwriter during the trials, the vise easily adapt to the new conditions and constitute a growing threat to human beings and animals in urban and peri-urban areas. The threat increases in addition to the fact that not all changes in anthropogenic are detrimental to the ticks. The abandonment of agricultural crops and afforestation of uncultivated land, Increasing the humidity of the environment with the discontinuation of the land as well as the beaver reintroduction and security activities related to the areas of Natura 2000 sites are some of the many factors conducive to the emergence of habitats for this species. In addition, and the more frequent presence in the forests, lack of awareness, In which environments are ticks, and excessive trust for commercially available products can growth repellant diagnosed tick-borne disease. Monitoring the size and activity of arthropods in environments these which are places of rest and recreation of residents from nearby cities and villages is an extremely important task given the diagnosis of epidemiological risk posed by these mites.

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REHABILITATION OF PEOPLE WITH LIKE ALZHEIMER DEMENTIA
Rehabilitacja osób z otępieniem typu Alzheimerowskiego

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Słowa kluczowe: choroba Alzheimera, otępienie, demencja, rehabilitacja, leczenie ruchem.

Abstract

Background: More and more people suffer from Alzheimer's disease. At its origin and development is influenced by many factors. Developing symptoms of the disease can be recognized only after many years of the degenerative process in the brain [1]. The aim of rehabilitation carried out with persons with Alzheimer's dementia is to improve general physical condition of these patients, improving their function of locomotion, increased independence, consolidate activities of daily living, prevention of hypokinesia, falls, bedsores and muscle atrophy, and the restoration of disturbed as a result of fracture or trauma, function of the body [2]. Work is to verify whether rehabilitation, conducted with patients with Alzheimer's disease is effective and brings results in improved functioning of these individuals.
Materials and methods: The research group is sixty caregivers of patients who responded to 20 questions posed in the survey. The charges are the first, second and third stages of Alzheimer's dementia.
Results: According to the caregivers of patients with Alzheimer's dementia, physical rehabilitation is needed and should be used in all stages of dementia. The vast majority of respondents believe that greater physical activity causes a milder disease undergoing a physical rehabilitation process, delaying the progression of dementia. Rehabilitation improves the functioning of patients in their environment, their independence and well-being. Active participation in rehabilitation by caregivers makes a noticeable improvement in patients. Almost all caregivers believe that family should be included in the rehabilitation process, so that patients receive higher performance improvement. Association help people with Alzheimer's and their families, provide support and psychological assistance and help in rehabilitation.
Conclusions: The use of physical rehabilitation is an important part of treatment of Alzheimer's disease. Improving the functioning and independence helps patients.

Streszczenie

Wstęp: Coraz więcej osób cierpi na chorobę Alzheimera. Na jej powstanie i rozwój ma wpływ wiele czynników. Objawy rozwijającej się choroby można rozpoznać dopiero po wielu latach trwania procesu degeneracyjnego w mózgu [1]. Celem rehabilitacji ruchowej prowadzonej z osobami z otępieniem typu Alzheimerowskiego jest poprawa ogólnego stanu fizycznego tych chorych, poprawa ich funkcji lokomocji, wzrost samodzielności, utrwalenie czynności dnia

codziennego, prewencja hipokinezji, upadków, odleżyn i zaniku mięśni, oraz przywrócenie zaburzonych w wyniku złamania lub urazu, funkcji organizmu [2]. Praca ma na celu sprawdzenie, czy rehabilitacja ruchowa, prowadzona z chorymi na Alzheimera jest skuteczna i przynosi efekty w postaci poprawy funkcjonowania tych osób.
Materiały i metody: Do grupy badawczej należy sześćdziesięciu opiekunów chorych, którzy odpowiedzieli na 20 pytań postawionych w ankiecie. Podopieczni znajdują się w pierwszym, drugim i trzecim stadium otępienia typu Alzheimerowskiego.
Wyniki: Według opiekunów chorych na otępienie typu Alzheimerowskiego, rehabilitacja ruchowa jest potrzebna i warto ją stosować we wszystkich stadiach otępienia. Zdecydowana większość ankietowanych uważa, że wyższa aktywność fizyczna powoduje, że łagodniej przechodzi się chorobę a rehabilitacja ruchowa opóźnia postęp procesu otępiennego. Rehabilitacja ruchowa poprawia funkcjonowanie pacjentów w swoim środowisku, ich samodzielność i samopoczucie. Czynny udział w rehabilitacji ruchowej powoduje zauważalną przez opiekunów poprawę stanu chorych. Prawie wszyscy opiekunowie sądzą, że należy włączać rodzinę w proces rehabilitacji, dzięki czemu chorzy uzyskują wyższe wyniki usprawniania. Stowarzyszenia pomocy osobom chorym na Alzheimera i ich rodzinom, zapewniają wsparcie i pomoc psychiczną oraz pomoc w zakresie rehabilitacji.
Wnioski: Stosowanie rehabilitacji ruchowej jest ważnym elementem leczenia choroby Alzheimera. Usprawnianie ułatwia funkcjonowanie i samodzielność chorych.

Introduction

Alzheimer's disease affects an increasing number of people. At the time of onset and severity of dementia affect vascular changes in the brain, which proved Snowdon and his colleagues in their study [1]. It is possible that the development of Alzheimer's disease has an impact in the past, a history of serious head injury. But still the main risk factor affecting the incidence is age [2]. Reliable diagnosis of Alzheimer's disease is possible only when neuropathological examination confirmed the presence of amyloid deposits in the brain and clinical dementia are found. Developing symptoms of the disease can be recognized only after many years of the degenerative process in the brain [3]. The researchers set themselves the goal of learning how to recognize Alzheimer's disease early, before the Alzheimer degeneration give any symptoms [4]. It happens that patients with dementia of Alzheimer's suffer from speech disorders [5]. The process of dementia, some patients require parkinsonian symptoms that manifest themselves mainly as a slow movement and rigidity of extrapyramidal type. These symptoms require treatment and rehabilitation, as difficult locomotion and further disrupt the daily physical activity. [6] The purpose of rehabilitation conducted with persons with Alzheimer's dementia is to improve general physical condition of patients, improving the function of locomotion, increased independence, consolidate activities of daily living, hypokinesia prevention, falls, bedsores and muscle atrophy, restoration of disturbed functions after a fracture or trauma [7]. rehabilitation of people with dementia has a lot of items. It includes: rehabilitation, physical therapy, therapeutic massage, rehabilitation, social, cognitive training, occupational therapy, bibliotherapy, and music therapy.

Alzheimer disease

1 Etiopathogenesis

Alzheimer disease is the dysfunction of the brain responsible for cognitive functions [3]. Neuropathological features of the disease are: formation of extracellular amyloid plaques in the brain, and the occurrence of neurofibrillary tangles. The cause of loss of neurons is the presence of toxic proteins in the brain. These include protein tau and beta amyloid [2, 3]. It is estimated that 11.2% of people in Poland after 65 years of age suffers from dementia, of which half - from Alzheimer's disease [8]. Busy dying of neurons takes place on cell apoptosis or by direct contact with the pathological entity. Beta amyloid appears outside neuronal, tau protein is formed inside the nerve cells in the brain. This leads to decrease in cerebral metabolism, which is the direct cause of Alzheimer's dementia [3]. Pathogenesis of the disease is still not well understood. Among the causes of the disease include genetic and environmental factors [2].

2 Symptoms of the disease

The disease is characterized by a gradual decline in memory. With the onset of the disease appear in the neurodegenerative brain changes that affect the central nervous system. Deficit is memory, cognitive functions, there are also behavioral problems - apathy, agitation and psychotic changes. Memory impairment, mainly concerned with current events. There may also aphasia, apraxia, agnosia, and difficulty in functioning in their environment [9]. There are also disorientation, judgment and abstract thinking. There is also lack of power, personality changes, mood swings, anxiety, drowsiness, depression, persecution mania and aggression [2]. The course of symptoms and their severity is individual. Symptoms of Alzheimer's dementia does not occur simultaneously or in a fixed order. In Alzheimer's disease, there are three stages and their boundaries are fluid.

3 Comorbid disorders

People with Alzheimer's dementia in addition to dementia may suffer from several diseases at once. An additional difficulty is the great geriatric problems, which are falling, non-receipt of the sphincter, constipation, osteoporosis, cardiovascular problems and traffic system [3]. Some people also suffer from mood disorders and depression, which is among the most common disorders ascertained in the course of Alzheimer's disease. The risk of depressive episode usually reaches 30 - 50% [10]. Symptomatic depression occurs in 11 - 17 percent of patients [11]. These individuals are

characterized by psychomotor slowing, impaired attention and a considerable slowdown in information processing [10].

Rehabilitation

So far there has not been a single, specific system of rehabilitation for people with Alzheimer's dementia. Before taking action physiotherapy is needed to assess the fitness and physical performance. Examines the range of motion, strength of key muscle groups and determines the presence and extent of any contractures that require rehabilitation. Patients with Alzheimer's are characterized by a loss of emotional contact, apathy, and reduced power [12]. This results in a drastic reduction in physical activity and leads to significant hypokinesia.

Common cause for referral to a guardian for help in improving, is the rehabilitation of complications fall. People with Alzheimer's disease are falling more often than their peers without dementia. In the literature there is information about the existence of characteristic numb imbalances, which mainly affect the formation of injury. There is no evidence for a distinct need of rehabilitation in people with Alzheimer's dementia, and research on rehabilitation, carried out with this group [13].

Scientists Weler and Schatzker from Canada in 2003, conducted research on hip fractures in people with Alzheimer's disease with concomitant osteoporosis. The number of fractures and falls in this group were more frequent than their peers without dementia, are in nursing homes [14]. From the observations of people with Alzheimer's dementia that their treatment and rehabilitation is slower and harder than their peers without the dementia disease. Capacity of a person with this type of dementia is deteriorating quickly, making a return to normal limb function and overall fitness before the fracture is much more difficult [15]. Rehabilitation after injury or other prolonged immobilization will be based on the functionality of everyday life, in shaping the figure and gait re-education so that it is efficient and does not torment the patient. Includes exercises to use stageness by matching appropriate exercise positions [13]. In the rehabilitation of persons demential, including those with Alzheimer's disease, avoiding the excessive burden of exercises and exercises with breath and frequent changes of position [16]. Conducting physical treatments carried out on the principles of geriatric physical therapy [17]. They fulfill a supporting role, they are used before or after exercise [18, 19]. The most commonly used treatments using various kinds of current, also uses a laser, low-frequency magnetic field and ultrasound [17]. So far have not established a specific program of physiotherapy for patients with dementia and the term "physiotherapy otępiałych" actually does not exist [20].

Aim of the study

The study aimed at knowing the opinion of carers of people with Alzheimer's dementia, on the effectiveness of rehabilitation, carried out with these people.

Materials and methods

The study group must be sixty caregivers of people with Alzheimer's dementia. Patients are in the first, second and third stages of dementia. To gather information on the effectiveness of rehabilitation I used an anonymous written survey, carried out with carers.

Results and discussion

All the people who took part in the survey conducted by me believe that the rehabilitation of people with Alzheimer's dementia is needed. Respondents also felt that rehabilitation should be used in the first (100%) and second (97%) of Alzheimer's dementia. The first contact a physiotherapist with someone with Alzheimer's disease is usually due to another condition, requiring rehabilitation. A common reason to request a guardian for help in improving, is the rehabilitation of complications fall. People with Alzheimer's disease are falling more often than their peers without dementia. In the literature there is information about the existence of imbalances demential characteristic [13]. Many studies have shown the beneficial effects of physical exercises that improve balance. Limitations of physical abilities of the elderly, may be enhanced under the influence of pain, weakness condition and comorbidities. Including patients in appropriately selected rehabilitation program, you can prevent the consequence of such phenomena [21]. As a result of rehabilitation is improved cardiovascular functioning, improve coordination, balance, flexibility and speed of movement. Regularly run rehabilitation reduces stress and anxiety in the elderly [18]. Rehabilitation is needed, as it allows patients with dementia of the Alzheimer's type gain increase muscle strength, increase range of motion. Improvement actions also affect the improvement of circulation, prevent disturbance of balance and falls. An active lifestyle reduces the incidence of anxiety and arousal, also stimulates the bowel, and improves sleep quality [12].

In the third phase of the disease, patients are almost all the time and that their activity is at a minimum. It is therefore not possible inclusion of patients in a way that is open to improvement. Is rehabilitation is then needed? 77% of respondents felt that, yes. Even the most impairments, patients may benefit from rehabilitation carried out by program tailored to their needs. Rehabilitation at this stage of the disease is mainly based on passive exercises. Therapist trains the legs, thus preventing blood clots and heart failure. Component are also improving postural

positions, therapeutic massage and percussion [12]. People still deeply numbed positively respond to various forms of therapy, although the time of their participation is only 10 - 20 minutes [22]. All these arguments show that rehabilitation is needed and should use it in people with Alzheimer's dementia. The literature lacks reports of specific contraindications to conduct the rehabilitation of persons suffering from Alzheimer's.

High mental activity prevents the emergence of Alzheimer's disease. It is not known whether physical activity can affect or delay the appearance of the neurodegenerative process. 67% of respondents felt that higher physical activity may delay the process of dementia. Alzheimer Society of British experts say that making work, both physically and mentally, helps to maintain physical and mental activity. This reduces the risk of senile dementia. The British study found that people are physically active for more than thirty percent lower risk of Alzheimer's disease, and poor physical condition may increase the risk of disease [23]. However, until now the mechanism of the direct impact of physical activity for people with Alzheimer's disease is unknown.

Vast majority of respondents - 93% are convinced that it improves the functioning of physical rehabilitation patients in the community. Typically, physical return of persons with Alzheimer's dementia who has suffered damage to the camera movement, from a medical point of view is incomplete [13]. But if as a result of rehabilitation will be that the patient take steps associated with daily functioning, will be able to do things that will allow him to do what it needs, rehabilitation has had a positive effect. By focusing on the rehabilitation of improving overall physical fitness, and focusing on improving the independent functioning of patients in their environment, rehabilitation of persons suffering from Alzheimer's benefits them. There is no lack of reports on the impact of rehabilitation on improving the functioning of patients in the community.

Rehabilitation of independence improves people with Alzheimer's dementia - so said 80% of those who participated in the study. Able to walk independently may be considered as the determinant of the degree of efficiency and independence in the elderly [25]. With the right to sufficient muscle strength and range of motion is as self-reliance and independence of patients. A key element of physical activity of older people, affecting the independence of these individuals, exercise is undertaken in the course of daily activities associated with moving. Exercise sustain the independent functioning of patients, by improving the major muscle groups and preservation movements used in daily activities [13]. In the literature found no studies that contradict the assertion that physical rehabilitation improves the autonomy of patients with Alzheimer's dementia.

Vast majority of respondents (93%) believe that rehabilitation has an impact on the well being of patients with Alzheimer's. Rehabilitation by improving efficiency and patient activity shapes their independence, which has a positive effect on mood, which is improving. Many seniors

finds that rehabilitation has increased thanks to their quality of life [11]. The interest in the problems of individual patients during rehabilitation, it gives the patient an additional sense of security and increased well-being [26]. In the literature found no evidence to refute the idea that physical rehabilitation improves the mood of patients with Alzheimer's dementia.

90% of caregivers believe that family should be included in the rehabilitation process. The involvement of persons with Alzheimer's dementia in rehabilitation, in large part to the support of their loved ones. Carers provide pupils about the purpose of therapy. Through its presence gives the patient a sense of security during the exercise. Therapeutic success largely dependent on the involvement of a guardian in the rehabilitation process [27]. 90% of respondents said that with the help of a family can achieve better outcomes of rehabilitation. Patients of Alzheimer's dementia can practice more often, even in the absence of the therapist. Carers in the study conducted by me indicated that the joint exercise combines family ties, makes the patient feel accepted and happy with their achievements.

Many people are taught from simple rehabilitation exercises to enable them to carry out the rehabilitation of their loved ones more often, increasing their efficiency preventing physical and hypokinesia [27]. In the literature there is no evidence that the family should not be included in the process of rehabilitation.

Vast majority of people who participated in the survey (97% of respondents) said that the associations help people with Alzheimer's disease and their families, are needed. With the help of associations, carers unload emotions about the disease and the resulting behavior of the patient and obtain assistance in rehabilitation. Through support groups, caregivers are given information about treatment and care. The participants exchanged their experiences [28]. Association also help in the supply of rehabilitation equipment - prams, walking frames.

Conclusions

1. Alzheimer's dementia predisposes to the appearance of disability, which requires improvement. While conducting the rehabilitation of persons suffering from Alzheimer's disease is more difficult and more time is needed to achieve the desired result, rehabilitation is needed which showed results of the study.
2. Physical rehabilitation should be used in the first and second stage of the disease, as it offers extensive benefits.
3. In the third stage of Alzheimer's dementia might be done in rehabilitation, and patients in spite of profound dementia may benefit from rehabilitation.

4. Improve the rehabilitation of independence and well-being of patients, improves the functioning of the environment in which they are located.
5. Thanks to the involvement of the family in the process of improvement can be achieved better results in rehabilitation. The patients can practice more often with the help of family, even during the absence of the therapist. Moreover, the presence of relatives during exercise allows patients to feel safe.
6. High physical activity throughout life causing milder illness transition. However, until now the mechanism of the direct impact of physical activity for people with Alzheimer's disease is unknown. It is not known whether physical rehabilitation, and general physical activity can affect the delay in the process of dementia, although respondents believe that it is.
7. Association of people with Alzheimer's are the undisputed support for patients and caregivers, and offer assistance in the field of rehabilitation.

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THE INTERDISCIPLINARY CHARACTER OF MOZART'S MUSIC THERAPY
Interdyscyplinarny charakter muzykoterapii Mozarta

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Keywords: music therapy, the effect of Mozart, alternative medicine, rehabilitation.
Słowa kluczowe: muzykoterapia, efekt Mozarta, medycyna alternatywna, rehabilitacja.

Abstract

Music therapy is one of many forms of interaction physiotherapy and psychotherapy, which affects not only the psyche but also the whole human organism.

Techniques and theories of music therapy process, used in music therapy are derived from different disciplines, which indicates an interdisciplinary field, which, along with such medical activities improves the health of human psychosomatic. Music therapy affects the physiological phenomena such as blood pressure, heart rate and respiration, as well as the emotional aspects of mood and feeling. Music regulates the rhythm of breathing, affects the relaxation of excessively tight and stiff muscles, slow heart function and lowers blood pressure.

Many researchers in their work shows that certain types of music are more than the others, the impact on the functioning of the human body. It is believed that the most stimulating music of the human brain is the music of Wolfgang Amadeus Mozart.

In 1997, Don Campbell called the specific effects of music on all human activity "Mozart effect". Special features of the music of Mozart, causing the above effects are: high-frequency sounds, clear and transparent form, multiplicity and variety of forms, moods, and temperature Studies have confirmed that Mozart's music in a special way affects the activity of sensory and nervous system by improving the including concentration and memory.

Streszczenie

Muzykoterapia jest jedną z wielu form oddziaływania fizjoterapeutycznego i psychoterapeutycznego, która wpływa nie tylko na psychikę ale i cały ustrój człowieka.

Techniki muzyczne oraz teorie procesów terapeutycznych, stosowane w muzykoterapii wywodzą się z różnych dyscyplin co świadczy o interdyscyplinarnym charakterze dziedziny, która obok m. in. działań medycznych wpływa na poprawę zdrowia psychosomatycznego człowieka. Muzykoterapia wpływa zarówno na takie zjawiska fizjologiczne jak ciśnienie krwi, bicie serca i oddychanie, jak i na aspekty emocjonalne : nastrój i uczucia. Muzyka reguluje rytm oddechowy, wpływa na rozluźnienie nadmiernie napiętych i sztywnych mięśni, spowalnia czynność akcji serca a także obniża wartości ciśnienia tętniczego krwi.

Wielu badaczy w swoich pracach dowodzi , że pewne rodzaje muzyki mają większą niż pozostałe siłę oddziaływania na funkcjonowanie organizmu człowieka. Istnieje przekonanie, że muzyką najlepiej stymulującą ludzki mózg jest muzyka Wolfganga Amadeusza Mozarta.

W 1997 roku Don Campbell nazwał specyficzne oddziaływanie muzyki na wszelką aktywność człowieka „Efektem Mozarta". Szczególne cechy muzyki Mozarta, wywołujące powyższe efekty to przede wszystkim: wysokie pasmo częstotliwości dźwięków, jasna i przejrzysta forma, wielość i różnorodność form, nastrojów i temp. Przeprowadzone badania potwierdziły, że muzyka Mozarta w sposób szczególny wpływa na aktywność sensomotoryczną i układ nerwowy poprawiając przy tym koncentrację i pamięć.

Music and medicine have been linked together since ancient times. The healing properties of music have been the subject of interest of ancient thinkers such as Aristotle, Plato and Pythagoras. About music in medicine has also appeared in the theories of many scholars since the nineteenth century to the present day [1]. Music therapy has been recognized as a method of psychotherapy, in addition to such forms as choreotherapy, dramatotherapy, psychodrawing and bibliotherapy, it was only after World War II [2].

According to the definition of K. Lewandowska, music is one of many forms of interaction physiotherapy and psychotherapy, which affects not only the psyche but also the whole human organism.

Techniques and theories of music therapy process, used in music therapy come from different disciplines, which means the interdisciplinary nature of the field, which, along with such medical activities improves the health of human psychosomatic.

Music therapy has been used successfully as a complement to the comprehensive therapy of patients with chronic, accompanied by severe pain, a sense of helplessness and depression, anxiety and uncertainty [3, 4].

Music therapy is characterized by a wide range of activities, which focuses on both body and mind of the patient and not just about the symptoms that occur in disease. The music therapist is the central figure of the patient treatment process which, according to Lerner (1994) improves the healing process not only the physical parameters but also significantly improving the quality of life by achieving a better integration of psychological, social and spiritual [5].

In music therapy there are four areas of development and associated impacts directions (Galińska):

- Psychosomatic: patient mental health support and vegetative regulation of activity of the organism;
- Psychological: influence of cognitive, emotional, communication and interactive and humanities:

- Psychomotor: the use of music therapy in motility disorders of the organism; the music function ordering and stimulating movement;
- Educational: music as a form of psycho-therapy in disorders of children and young people and the difficulties of teaching and education [2].

Music Therapy uses many different techniques. Elżbieta Galińska distinguished among them seven groups based on their function in psychotherapy:

1. **Training methods** - relaxation, autogenic training based on the Schulz - their job is to teach the patient how to remove mental tension.
2. **Relaxation methods** - the use of recorded music with a soothing and relaxing effect. Patients contribute to address therapeutic writing their own texts (short stories, fairy tales) and choose the music to them. This method is a combination of therapy and bibliotherapy.
3. **Communicative methods** - by learning new behaviors taught emotional and social communication. They develop skills of cooperation and compassion expressed emotions through participation in small forms of theater, drama and psychodrama. In the therapeutic process by this method gradually sensitize the patient to stimuli and helps to break the barriers of shame related to public speaking. This form of therapy is particularly effective among children and young people and those with anxiety disorders.
4. **Creative methods** - used in the form of creative activities in the field of physical improvisation, instrumental and vocal music. An example of this form of therapy is a method of making music by Carl Orf, whose essence is playing simple percussion instruments, designed to develop expression and improvisation.
5. **Methods relieve-imaginative and emotionally-activating** music frees the patient imaginative process, calls to mind images of extra-musical and visual of a projection. This is called creative visualization. Relieve-imaginative techniques are used in music therapy, both for diagnosis and subsequent treatment. Often unconscious emotions, disclosed during music therapy sessions during therapy are acting out, discussed and analyzed. A greater awareness of their feelings and emotions allows the patient to greater openness in relation to the other and thus improves its communication with the environment.
6. **Music-sensitizing training** develops the skills to perceive signs and sounds of life in music [2, 3, 6].

Depending on the diagnosis and symptoms, taking into account the purpose of therapy, the anticipated duration of treatment and the activity of the patient, uses a perceptual music therapy

(receiving) and active (executive). Both forms of music therapy can be conducted individually or in groups.

Properly selected methods and techniques for accurate determination of treatment and also take into account the patient's expectations and individually tailored musical material impact on the effectiveness of music therapy process.

Used in the treatment records may be of a stimulant-stressed by the fast pace, contrasting melodic and diverse dynamics, or sedative-distinguished by the slow pace of uniform dynamics and peaceful metronomes [1, 2].

Music has an influence on the work of human physiological systems and autonomic tension on a direct resonance due to the interaction of body rhythm, tempo, volume on sympathetic zone of the cerebral cortex and the sympathetic celiac trunk [7]. Music therapy affects the physiological phenomena such as blood pressure, heart rate and respiration, as well as the emotional aspects of mood and feeling. Music regulates the rhythm of breathing, affects the relaxation of excessively tight and stiff muscles, slow heart function and lowers blood pressure. Studies conducted on a group of adults also showed the influence of music on reducing the level of anxiety and depression in patients suffering from respiratory diseases. Studies also demonstrate the influence of music on mood improvement in patients after myocardial infarction [8].

The state and activity of mind and body affect the proper functioning of the human being. It is well known that music affects our mood, level of emotion or the degree of relaxation. Each type of human activity due to the brain, in which the electrical potentials generated called brain waves responsible for the transmission of impulses between neurons in the cortex.

Conducted by A. Tomatis study the effects of music on humans have shown that perceived by the ear when listening to music stimuli Sound, which are transformed into nervous system in the auditory nerve impulses influence the dynamics impulsation neurons in the cortex. This process produces many positive effects on the human body such as increased creativity, improved memory, improved motor coordination, or delay the symptoms of fatigue.

Described dynamization of the cerebral cortex is the result of synchronization of brain waves, in which different parts of the brain work in the same rhythm.

In following table shows the relationship between the type of brain wave and its induced state of consciousness.

Table I. The relationship between the type of brain wave and its induced state of consciousness (Humięcka-Jakubowska J. 2008).

Type ofwave brain	Range of frequency	Features characterizing the waves of	Nature of mental activity
Delta	0.5-4 Hz	Rarely and spontaneously generated, a large amplitude and small frequency.	State of deep sleep, unconscious. Periodically, there are dynamic dreams.
Theta	4-8 Hz	Occur for short periods, with a large amplitude and very high rate of synchronization.	State of high creativity, deep meditation and slow descent into sleep. Frequently observed occurrence of spontaneous hypnagogia, which occurs during the "half-dream", as well as illusions and hallucinations at some level of consciousness. Occurrence of dreams in this state is less dynamic in nature and is characterized by emotionally.
Alpha	8-12 Hz	Are emitted rhythmically, with relatively large amplitude (and hence timing)	Of the total resting state (eyes closed), the state of relaxation, relaxed, reaching the upper limit of the frequency indicates a state of heightened attention in anticipation of the appearance of the stimulus, the lower limit of the frequency reaches the brain, located on the border between sleep and mode.
Beta	13-30 Hz	Are characterized by variable amplitude and high frequency, corresponding to the frequency of stimulation. The small amplitude of these waves represent a small synchronization of brain waves.	State of increased mental activity, to which the process of information processing. The increase corresponds to a higher excitation frequency, which often reaches excessive levels leading to the formation of the stress response.

Many researchers in their work shows that certain types of music are more than the others, the impact on the functioning of the human body. It is believed that the most stimulating music of the human brain is the music of Wolfgang Amadeus Mozart [9].

Wolfgang Amadeus Mozart

Wolfgang Amadeus Mozart was as born in Salzburg in 1756. From 6 years old and his father Leopold, Kapellmeister of the local bishop and his sister Anna Maria appeared at the royal and imperial courts in the aristocratic salons and at home, playing instruments such as the clavichord, harpsichord, piano, organ and violin. His first tour included Munich, Vienna, Paris, London and other cities of Europe.

Over a period of Mozart lived in Paris with his mother and that's where he published his first compositions in print - then appeared in four violin sonatas. In 1777, after the death of his mother left town and returned to Salzburg, where he assumed the post of organist at the court of the

Archbishop. Dissatisfied with the cooperation abandoned Salzburg court and went to Vienna, where he worked as a music teacher in the Weber family. There he said to Constance Weber, despite the opposition of his father, who believed that his son become a better game. The wedding took place in 1782. Mozart earned very well but my wife gave huge sums of money often changing residence, traveling for treatment to Baden. He also had six children dependent. Mozart had to obtain a permanent job as court Kapellmeister at the court of Joseph II, Emperor but instead chose to place the Italian Antonio Salieri. Mozart accounted for less paid job of the court music.

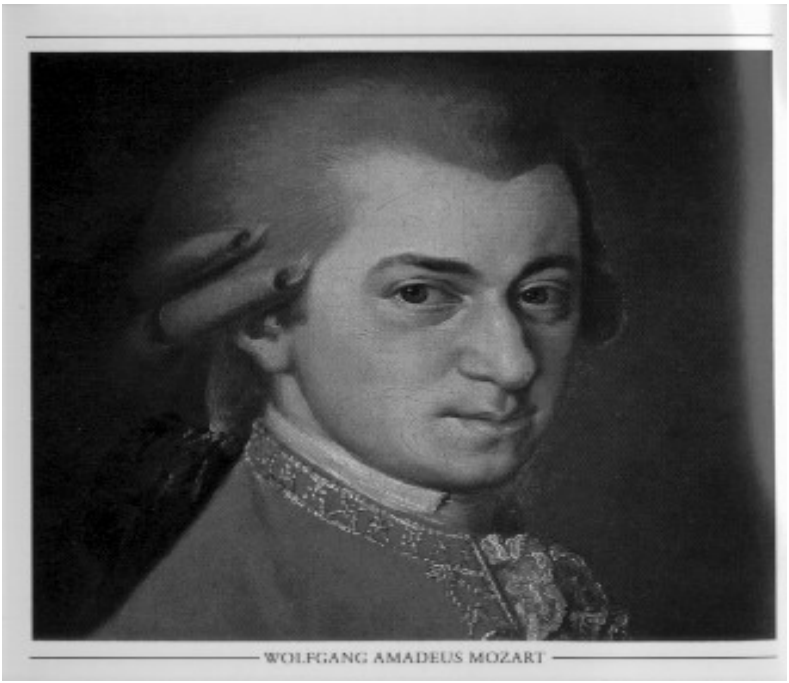

Figure 1. Wolfgang Amadeus Mozart (1756-1791).

Table II. Selected works by Mozart.

Opera	Symphonies	Piano Concertos	Violin Concertos
- **Don Giovanni** - **The Marriage of Figaro** - **Don Juan** - **The Magic Flute**	- C-major "Jupiter" - D-major "Haffner" - C-major "Linz"	- D-minor - C-major - D-major "Coronation"	- G-major - D-major - A-major "Turkish"

The work of Amadeus, despite the short thirty-five year old life, characterized by a magnitude and excellence. He had a great ease of composing as evidenced by more than 630 works of musical achievements. The last track is a master choral work "Requiem in D minor". Outstanding tracks: "The Magic Flute" and "Don Giovanni" was created to live in squalor and poverty. When offered the job of music director at St. Stephen's Cathedral. Stephen's in Vienna, it was a chance to break out of poverty. Never, however, has not used it. He died on December 4, 1791 [3].

Therapeutic use of Mozart music therapy

Mozart apply a different articulation of the musical by non-legato to staccato-legato in his work is not a homogeneous form.

Through such forms as opera, symphony, concert, solo and chamber orchestra , aria da capo, we see the possibility of therapeutic activity by expressing the basic mythological affects such as joy, longing, sadness, grief.

Important element is the pace of songs that Mozart is very different from adagio to presto. It is also important to the articulation and finesse momentum tracks, which suggest the therapeutic nature of verbal musical text messages and the libretto.

First experience with music by Mozart wrote in 1991, the French otolaryngologist Alfred A. Tomatis. In his book "Why Mozart?" Admitted that listening to Mozart's music stimulates the brain and allows it to regenerate.

In 1997, continuing the research Tomatis, Don Campbell called the specific effects of music on all human activity 'Mozart effect' [10,11] The study confirmed that Mozart's music in a special way affects the activity of sensory and nervous system while improving concentration and memory. Special features of the music of Mozart, causing the above effects are: high-frequency sounds, clear and transparent form, multiplicity and variety of forms, moods, and at Campbell and other researchers 'Mozart Effect' rich creativity of the composer divided into groups according to the induced effect.

Among the works of activating the brain, stimulating mental processes and enhancing the vitality of the body were, among others:

1. Violin Concerto in D major No. 2 K 211;
2. Violin Concerto in A major No. 5 K 219;
3. Piano Concerto in A major No. 23 K 488;
4. in A Major Symphony No. 29 KV 201;
5. Symphony No.S-major "Haffner" No. 35 K 385;
6. Symphony in G major No. 32 K 318;
7. Symphony in C major "Jupiter" No. 41 KV 551;
8. All string quartets;
9. Quadrille.

The group works on action and relaxing wyciszającym include among others:

- Adagio of the Serenade in B flat major No. 10 "Grand Partita" KV 361;
- Cherubino Aria-Voi che sapete (Act II) of the Marriage of Figaro, K 492;
- Part 1 - Allegro from Clarinet Concerto in A major KV 622;

- Part 2 - Andante from Piano Concerto in C major No. 21 K 467;
- Part 3 - Concertante. Andante grazioso of the Serenade No. 9 KV 320;

Among the works by stimulating concentration and coordination, and learning the use of rhythm and movement were not limited to:

1. Aria "champagne" - Finch'an dal vino (act I) from Don Giovanni, K 527;
2. March of the D- No. 1 in E flat major KV 335;
3. Rondo Alla Turca from Sonata in A major KV 33;
4. Quadrille in C Major for Orchestra "La Bastille" KV 535 [10].

After analyzing the work of individual works by Mozart would seem that the Allegro from Clarinet Concerto in A major KV 622 characterized by the rapid pace is not conducive to relaxation. However, the intriguing and colorful melodic line of this work affects the concentration of attention and the dynamic tempo energizes and helps you reach a state of relaxation. Uniform rhythm and repetition of motifs affects the alignment of functional rhythms in the body the person listening to music which promotes In relaxation, turn the Andante from Piano Concerto in C major No. 21 K 467 has many features for achieving the state of relaxation. The regular rhythmic pulsation and repetition structures aligns breathing rhythms, brain activity, heart rate and metabolism listener with sound structures pulsation.

Symphony in E-flat major No. 39 K. 543 is rewarding and pleasant song. In such a mood part introduces the listener. Part 1 - Allegro, maintained in a light, swinging, dancing rhythm. In the second part of the Symphony, Andante con moto, the mood of the listener is kept. Repeatability sections of this part is also good for reaching the state of relaxation and the high register of the first violin evokes in the listener cheerful mood, which is also continued in part 3 - Minuet for a dance. Final Symphony (Allegro) with dance, rhythm continues spinning playful mood. The large variation in the pitch and the high volume helps the listener to maintain a cheerful mood [10].

Mozart's music is used as a complementary form of treatment in many important fields of medicine.

Effect of Mozart's music to increase the capacity of reasoning presented in his work Steele. He presented the study Rauscher et al, 1993 where a group of students were tested on intelligence test scale Stanford-Binet with successively: Mozart's piano sonatas, tapes of relaxing music and silence. Results 8-9 points higher on IQ students have achieved during the test fill with music by Mozart. Coincidence for this study was chosen sonata for two pianos in D major, K 448, which is a lively song, which highlights the virtuosity of the performers also [12, 13].

In their studies showed Hajime Kimat Mozart effect of music therapy on the reduction of skin allergy symptoms in patients with atopic dermatitis are allergic to latex. The results of this study indicate the existence of mechanisms of music therapy and neuroimmunological show that listening to Mozart's music in particular is useful in the treatment of some allergic diseases [14].

Mozart's music has found a use in patients with epilepsy. Impressive results in their work shows Jenkins. In 23 of 29 patients with focal lesions who listened to Mozart's piano sonata K488, a significant decrease of epileptic EEG activity in the image [15].

In a study of scientists from Israel noted that the music of Mozart, to reduce the energy consumed by infants at rest. In this experiment, 20 healthy infants were divided into two groups, one of which rested with the music of Mozart 30 minutes a day and the second, with total silence. The authors found that infants who listened to Mozart for 10 minutes at rest have used 10-13% less energy than children who were not exposed to music. The effect persisted as long as the infants were exposed to music [16].

Conclusions

Quoted observations and studies on specific effects of music, especially Mozart, to changes in the brain and the human body, have an interdisciplinary character, because it showed a positive effect on humans in many different fields of medicine, from cardiology, neurology by up to pediatrics.

Mozart's music is exceptional because, thanks to a clear form and high-frequency sound affects not only the integration and harmonization of the heart and brain, but also affects the sensory nervous system and human sensitivity.

Since the first studies carried out "effect Mozart" by Campbell, the list of songs, "activating" and "relaxing" is increased by the work of other authors, but they are similar in nature to the works of eminent authors as he was Wolfgang Amadeus Mozart [10].

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EVALUATION OF KNEE FUNCTION AFTER ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

Ocena funkcji stawu kolanowego po rekonstrukcji więzadła krzyżowego przedniego

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Keywords: anterior cruciate ligament, reconstruction of the ACL, the knee diagnosis.
Słowa kluczowe: więzadło krzyżowe przednie, rekonstrukcja ACL, diagnostyka stawu kolanowego.

Abstract

The rapid growth of ligament injuries of the knee is associated with ongoing technological progress, development of competitive and recreational sports, and traffic accidents.

Aim of the study. Evaluation of knee function in patients one year after the performed ACL reconstruction and answer research questions: 1. Does the proposed study design can be used to evaluate the functional state of the knee after ACL reconstruction? 2. Do you applied fitness tests can be useful for assessing the functional status of patients after ACL reconstruction?

Materials and methods. For the study group included patients 12 months after ACL reconstruction in the Department of Orthopedics and Traumatology Hospital J. Biziel. The survey turned up 50 people who have expressed a confirmation in writing. The research group collected for the reconstruction of the same type of patellar tendon graft. After surgery, patients underwent bedside rehabilitation, and continued physical therapy in outpatient rehabilitation on an outpatient basis. The control group consisted of 50 healthy volunteers who participated in the study after reading the notice stated on the notice boards at ambulatorium clinics University Hospital A. Jurasz in Bydgoszcz and Hospital J. Biziel in Bydgoszcz, Bydgoszcz and Universities. Groups of 50 healthy volunteers were studied following the same pattern as the research group, with the exception of questions about a knee injury and treatment, which appeared in the physical examination. Contrast, physical examination and functional was carried out according to the same scheme as for the research group. To assess statistical differences between the distributions of quantitative variables in the three measurement circuits are used Student's t-test for treated leg and nieoperowanej.

Results. The level of significance was p value ≤ 0.05. The difference was statistically significant at $p < 0.0001$ for measuring circuit 1 and the second circuit in the case of the measurement circuit 1 is the fact that no fully restored muscle mass at the height of the medial head of the quadriceps muscle. In the case of the measurement circuit 2 and circuit 3 a trend towards an increase in average value in relation to the leg nieoperowanej, where the difference in circumference 3 was statistically significant at $p < 0,0001$. Comparison of circuit 1, circuit 2, circuit 3 surgical management of the treated leg, by Student's t test. To assess statistical differences

between the results of the symmetry index of the test with eyes closed and open, used a nonparametric Wilcoxon test. The level of significance was p value ≤ 0.05. The difference was not statistically significant. For the statistical evaluation for comparison of the operated limb of the operated limb Wilcoxon test was used. The difference was statistically significant for both trials. By analyzing the average values of pressure for all the designated parameters it was found that higher values, were achieved through the operated limb. For further statistical evaluation according to the Wilcoxon test was used for comparison of two tests for the flexor muscles in the chain of open and closed. The difference was not statistically significant.

Conclusions. 1. The proposed study design is an effective and objective method for assessing the functional state of the knee after ACL reconstruction. 2. The used fitness tests can be useful for assessing the functional status of patients after ACL reconstruction, which is confirmed by the subjective assessment of the patient.

Streszczenie

Gwałtowny wzrost urazów aparatu więzadłowego w stawie kolanowym związany jest z ciągłym postępem technicznym, rozwojem sportu wyczynowego i rekreacyjnego, oraz wypadkami komunikacyjnymi.

Cel pracy. Celem pracy jest ocena funkcji stawu kolanowego u pacjentów w rok po wykonanej rekonstrukcji więzadła krzyżowego przedniego i odpowiedź na pytania badawcze: 1. Czy zaproponowany schemat badania może posłużyć do oceny stanu czynnościowego stawu kolanowego po rekonstrukcji więzadła krzyżowego przedniego? 2. Czy zastosowane testy sprawnościowe mogą być przydatne do oceny stanu funkcjonalnego pacjenta po rekonstrukcji więzadła krzyżowego przedniego?

Materiał i metody. Do grupy badawczej zakwalifikowano osoby 12 miesięcy po rekonstrukcji więzadła krzyżowego przedniego z Oddziału Ortopedii i Traumatologii Szpitala im. dr J. Biziela w Bydgoszczy. Na badanie stawiło się 50 osób, które dla potwierdzenia wyraziły pisemną zgodę. W grupie badawczej do rekonstrukcji pobrano ten sam rodzaj przeszczepu z więzadła rzepki. Po zabiegu operacyjnym pacjenci mieli wykonaną rehabilitację przyłóżkową, a następnie kontynuowali zabiegi rehabilitacyjne w przychodniach rehabilitacyjnych w trybie ambulatoryjnym. Grupę kontrolną stanowiło 50 zdrowych ochotników, którzy zgłosili się na badania po przeczytaniu ogłoszenia zamieszczonego na tablicach informacyjnych w poradniach przyklinicznych Szpitala Uniwersyteckiego im. dr A. Jurasza w Bydgoszczy i Szpitala im. dr J. Biziela w Bydgoszczy oraz na bydgoskich uczelniach. Grupa 50 zdrowych ochotników została przebadana według takiego samego schematu, co grupa badawcza, z wyjątkiem pytań dotyczących urazu kolana i przebiegu leczenia, które pojawiły się w badaniu podmiotowym. Natomiast badanie przedmiotowe i czynnościowe było przeprowadzone według tego samego schematu, jak dla grupy badawczej. Do oceny statystycznej różnic między rozkładami zmiennych ilościowych w trzech pomiarach obwodów posłużono się testem t-Studenta dla nogi operowanej i nieoperowanej.

Wyniki. Jako poziom istotności przyjęto wartość p ≤ 0,05. Różnica okazała się istotna statystycznie, przy p<0,0001 dla pomiarów obwodu 1 i obwodu 2. W przypadku pomiaru obwód 1 świadczy fakt, że nie w pełni została przywrócona masa mięśniowa na wysokości głowy przyśrodkowej mięśnia czworogłowego. W przypadku pomiaru obwód 2 i obwód 3 zauważa się tendencję do wzrostu średniej wartości w stosunku do nogi nieoperowanej, gdzie różnica w obwodzie 3 okazała się istotna statystycznie dla p<0,0001. Porównanie obwodu 1, obwodu 2, obwodu 3 nogi operowanej z nieoperowaną, za pomocą testu t-Studenta. Do oceny statystycznej różnic między wynikami wskaźnika symetryczności badanego przy oczach zamkniętych i otwartych, posłużono się testem nieparametrycznym Wilcoxona. Jako poziom istotności przyjęto wartość p ≤0,05. Różnica okazała się nie istotna statystycznie. Do oceny statystycznej dla porównania kończyny operowanej z kończyną nie operowaną posłużono się testem Wilcoxona. Różnica okazała się istotna statystycznie dla obu prób. Analizując średnie wartości nacisku dla

wszystkich wyznaczonych parametrów okazało się, że wyższe wartości były osiągane przez kończynę operowaną. Do oceny statystycznej kolejnej zależności posłużono się testem Wilcoxona dla porównania dwóch prób dla mięśni zginaczy w łańcuchu otwartym i zamkniętym. Różnica okazała się nie istotna statystycznie.

Wnioski. 1. Zaproponowany schemat badania stanowi skuteczną i obiektywną metodę oceny stanu czynnościowego stawu kolanowego po rekonstrukcji więzadła krzyżowego przedniego. 2. Zastosowane testy sprawnościowe mogą być przydatne do oceny stanu funkcjonalnego pacjenta po rekonstrukcji więzadła krzyżowego przedniego, co znajduje potwierdzenie w ocenie subiektywnej pacjenta.

Rapid growth of ligament injuries of the knee is associated with ongoing technological progress, development of competitive and recreational sports, and traffic accidents. Traumatic injuries of the knee within a 15 - 30% of all injuries. While damage to the anterior cruciate ligament accounts for 50% of all injuries within the knee joint. In the event of damage to the anterior cruciate ligament comes to the appearance of anterior knee instability, which manifests itself functionally insufficient congruity of the knee joint during loading of the limb. Consequently, a disorder rolling-sliping motion knee, due to excessive joint laxity, caused by loss of function of the anterior cruciate ligament. Exposure to continuous knee subluxation front base of the proximal tibia lead to the rapid development of degenerative changes of articular surfaces and damaged menisc. This is due to constant overloading and stretching of the secondary stabilizers of the knee.

Initiation of appropriate treatment will depend on the degree of instability. When I ° shall be treated conservatively, while in the case of instability II ° and III °, surgical treatment is required, involving the suture, the strengthening or reconstruction of the damaged ligament.

Different ACL treatments, both Conservative and operational, are a problem for modern orthopedic and rehabilitation. This situation shows how much difficulty there is in restoring the functional and structural stability of the knee.

Among the methods of surgical treatment of the most popular in arthroscopic anterior cruciate ligament reconstruction. According to many authors, ACL reconstruction surgery will never replace and restore the ligament from the point of view of anatomy, physiology and biomechanics, and especially such features as proprioception. Currently, there are more and more popular theory, that not all cases require a reconstruction, except for professional athletes. Patients after angioplasty ACL ligament is characterized by a combination of problems which include: the need for orthopedic equipment, restriction of joint mobility, muscle atrophy, muscle weakness, a feeling of instability and abnormal loading of the lower limbs.

Accordance with the principles of evidence-based medicine, EBM (Evidence Based Medicine), a reasonable estimate is only possible when using reliable systematic research. Selecting the best therapy possible route is to their own clinical experience integrated with the solutions used

by other researchers. Standardized measurement scales, created for the specific purpose for a specific population, offer the possibility to detail the clinical trials and are the key to evaluate and compare the results. Methods with very high sensitivity in the evaluation of individual features may not notice changes on the level features, like the rock of too low sensitivity may not be considered too subtle functional differences.

In clinical practice, there is no universal scale, to evaluate the overall functional changes occurring in the knee in patients after anterior cruciate ligament reconstruction. Method selected must serve a specific purpose and to enable the recording of functional changes occurring in the area. Gather basic data on factors affecting the functioning of the knee, will assess the baseline in the field of rehabilitation and the performance and effectiveness of the treatment so far. Additionally, enable the planning objectives of treatment and will be a useful tool to those making further therapeutic measures.

In assessing the degree of function recovery after treatment of operational and rehabilitation, it is the patient's subjective experience and objective assessment methods such as dynamic tests, the specific functional test, measurement metric and goniometric. Functional tests provide an opportunity to compare limb function after injury to a healthy limb, the whole chain is evaluated biokinematic, not just the site of injury. The results of these tests or trials, are the basis for selection of therapeutic agents such as the type of exercise training loads, and as a measure of the effectiveness of rehabilitation. Today, many scientific and medical centers will try to find an objective way of evaluating the results of operational and rehabilitation therapy. This will allow to avoid or minimize any complications in future patients.

The main goal of rehabilitation of conservative and surgical, is to restore full function of the knee and the whole lower limb. The activities are aimed at recovering the correct motion, proprioception, strength, coordination, and possibly the patient's rapid return to activities of daily living, work and recreational activity or sport. An important task of the rehabilitation process is to prevent re-injury and overloading other parts of the body, which compensates for failure in the kinematic chain knee during various activities.

Purpose of research

Therapeutic team effort, consisting of orthopedic surgeon and physiotherapist, is subjected to constant monitoring, for this purpose are scales, surveys, and equipment for evaluation. The measurement of various parameters used to objectively assess the progress of the patient, the choice of appropriate strategies of rehabilitation and increasing the efficiency and safety. The main aim is

to assess knee function in patients one year after the performed ACL reconstruction and answer research questions:

1. Does the proposed study design can be used to evaluate the functional state of the knee after ACL reconstruction?
2. Do you used fitness tests can be useful for assessing functional status of patients after ACL reconstruction?

Material

The study group included patients 12 months after ACL reconstruction with the Department of Orthopedics and Traumatology Hospital J. Biziel. The survey turned up 50 people who have expressed a confirmation in writing. The research group collected for the reconstruction of the same type of patellar tendon graft. After surgery, patients underwent bedside rehabilitation, and continued physical therapy in outpatient rehabilitation on an outpatient basis.

During the study, the average age of participants was 31,16 years. Oldest person tested was 54 years, the youngest 18 years. There is a clear link between the age groups studied and the occurrence of an injury due to physical activity, sport and Due to professional the fact that the ACL injuries most commonly occur during sports for the young and active population, the research group analysis shows that the most common cause of ACL injury and the emergence of instability among the respondents was a sports injury, as occurred in 81% of patients, trauma, communication, and affected 11% of injuries associated with the work performed in 8%. The largest group were people practicing professional sports, amateur sports, and dealing with recreation. Therefore, sport is a major risk factor for ACL injury. Sports in which there were injuries are: football 37%, ski 29%, basketball 7%, handball 5%, volleyball 5% and other disciplines 17%.

Control group consisted of 50 healthy volunteers who participated in the study after reading stated on the notice boards in ambulation clinics University Hospital A. Jurasz in Bydgoszcz and Hospital J. Biziel in Bydgoszcz and Bydgoszcz Universities.

Methods

Meeting the patient proceeded according to the following scheme, which was completed on the basis of statistical analysis of parameters gathered from the full set of tests (Fig. 1).

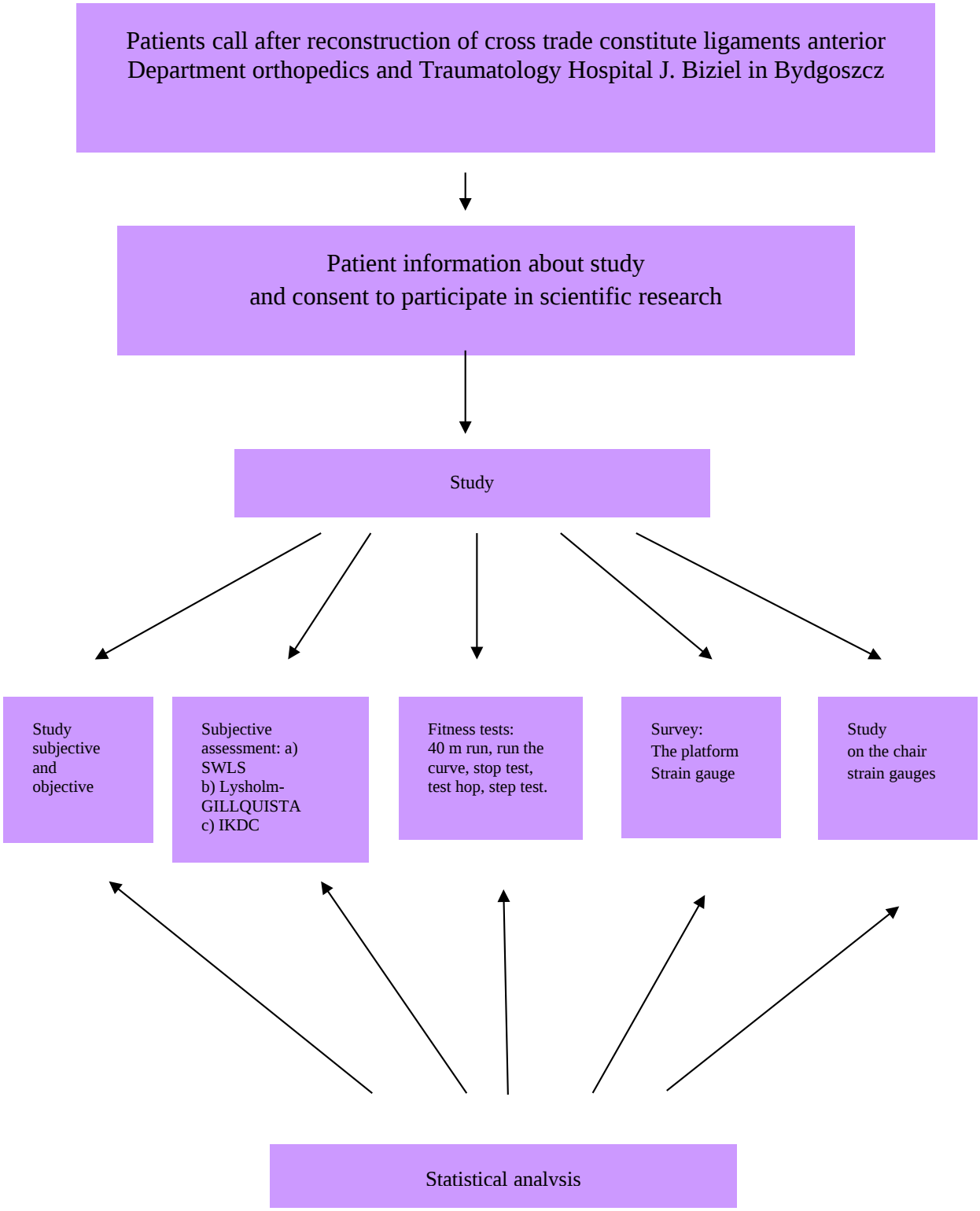

Fig. 1. Diagram of the meeting with the patient completed statistical inference.

Group of 50 healthy volunteers were studied following the same pattern as the research group, with the exception of questions about a knee injury and treatment, which appeared in the physical examination. Contrast, physical examination and functional was carried out according to the same scheme as for the research group.

1. Physical examination consisted of the interview and answer relating to: personal data, professional activity, hobby, circumstances of the injury, the treatment and rehabilitation of independence in activities of daily living, pain in the knee and functional disorders.

2. Physical examination.

The patient's clinical assessment takes into account the differences in the measurement circuit of the lower limbs (Circuit 1 - measuring 6 cm above the base of the patella, Circuit 2 - at the base of the patella, Circuit 3 - at the height of knee joint) measured by tape measure and range of motion (the angle of flexion and extension), which was measured using a goniometer actively. In addition, clinical evaluation was performed for symptoms of knee instability, anterior drawer test.

Fig. 2. The measurement of thigh circumference. Starting position - PW, lying back.

Fig. 3. End position - PK during the measurement range of active flexion of the knee.

Starting position - PW lying ahead, the rate of the limb of the test outside the ground, the axis of a goniometer applied to the head of the arrow according to the transverse axis of the joint. Fixed arm protractor aligned along the long axis of the thigh, excels at the greater trochanter of the femur, tibia arm moving along the side facing the ankle. During the movement of movable arm bending joint moves along with shaving. The therapist observes the pelvis and thigh, or the subject does not compensate for motion and exercise it properly in the sagittal plane.

Fig. 4. Anterior drawer test.

Starting position - PW lying back with the limb bent studied in the hip and knee, foot-based substrate. The therapist grasps both hands, lower leg below the knee and moves forward.

Fig. 5. Study extension of the knee.

3. Functional test.

1. Study on Strain gauge platform MTD Control.

To load test of the lower limbs in a standing position the platform load cells used MTD MTD Control System from Physio-Feedback software for Windows. The study allows the judge to charge the lower limbs and the stability of the knee in different positions output. Patients were subjected to a static four trials, two were performed with eyes open and two with eyes closed, on the platform MTD Control, 4 x 40 seconds, with 5 minute intervals (Fig. 6).

Fig. 6. Static Test Strain gauge platform MTD Control.

To evaluate the test result on the platform used MTD Control EXEL spreadsheet provided with a program that allows import ASCII data from the memory Physio-Feedback. EXEL worksheet automatically calculates the ratio of pressure - the index of symmetry (WS), the average pressure of the lower limbs, expressed in Newtons [N], in%, MAX and MIN value and standard deviation. The study used a WS, which is the quotient of the larger to the smaller load on each of the limbs. The correct value of WS is close to unity, and the norm is considered the results fall within the range from 1.00 to 1.15. The device measures the load of the lower limbs with a frequency of 1000 Hz. Since the measurement lasted for 40 seconds gives 40 000 variables are stored in Excel.

3.1. Study on the chair tensometric MTD Control.

To study the position of strength was used to measure isometric contraction torque, consisting of a chair to resistance exercise, equipped with a head with strain gauges, connected to the computer using momentomierza. This allows you to evaluate the muscle strength of lower extremities, starting in different positions. Seat load cell MTD MTD Control System from Physio-Feedback software for Windows is a modern apparatus for the diagnosis and documentation of the symptoms seen in the lower limbs of various origins.

`Eight patients were tested static load cell on the chair MTD Control in three angles of 30°, 60° open and closed chain on wall in a sitting position and for the flexors in the chain of open and closed position lying ahead. Between attempts were eight minutes apart. Patients performed on wall after one attempt in the following settings: 30° in the open chain (OKC), 30° in a closed chain (CKC), 60° in the open-chain (Fig. 7), 60° in a closed chain (Fig. 8), 90° in the open chain, 90° in a closed chain, and for the flexors in the open-chain (Fig. 9) and 60° in a closed chain (Fig. 10).

Fig. 7. Test for static rectifiers 60° in the open chain (the patient has his hands hanging loosely) on the seat load cell MTD Control.

Fig. 8. Test for static rectifiers 60° in a closed chain (the patient holds the handles of the device) in the chair tensometric MTD Control.

Fig. 9. Static test for flexor open-chain (OKC) in the chair tensometric MTD Control.

Fig. 10. Static test for flexor in a closed chain (CKC) in the chair tensometric MTD Control.

To assess the quantitative measurement of the seat curves strain gauge used MTD Control Excel spreadsheet provided with a program that allows import ASCII data from the memory Physio-Feedback for Windows. Excel worksheet automatically had an average pressure of the lower limbs, expressed in [N]%, standard deviation, maximum and minimum values, the index of symmetry (WS) and area under the graph. WS value was calculated similarly as in the study, Strain gauge platform. Greater emphasis leg of the chair read Control MTD was divided by the lower pressure, giving a result of WS. In the case study attempts to use the seat load cell symmetry index was used to evaluate the pressure of the lower limbs of strain gauges. The correct value of WS is close to unity, and the norm is considered the results fall within the range from 1.00 to 1.15. These values were adopted in the study. Seat Control MTD strain gauge measurements shall record the frequency of 1000 Hz, which at 25-second measurement time gives 25 000 recorded results that are passed to the average of the Excel program.

3.2. Fitness test.

To evaluate the results of the operational and rehabilitation fitness tests were used: a test run in a straight line retention test, a test run on a curve, hop test and step test. Adopted to evaluate the performance difference in the scores obtained for the completion of five tests of fitness according to a formula:

Table 1. Overall test scores for Fitness.

Very good	Good	Bad
10 - 8 points	7 - 4 points	3 - 0 points

Test run in a straight line (Fig. 11).

Patient does run in a straight line over a distance of 40 meters. For the evaluation, the following criteria:

Table 2. Scoring for the execution of a test run in a straight line.

2 points	1 point	0 points
≤ 13 seconds	13 - 20 seconds	≥ 20 seconds

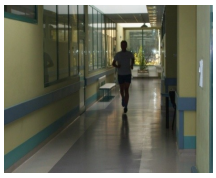

Fig. 11. Test run in a straight line 40 meters.

Stop test (Fig. 12).

Test, during the run stops after hearing a STOP command. For the evaluation, the following criteria:

Table 3. Scoring for the execution of the test stops.

2 points	1 point	0 points
Stop over a distance of 2 meters	Stop over a distance of ≥ 2 meters	Stop over a distance of ≥ 3 meters of moving the load on leg without surgical management

Fig. 12. Test stop.

1. Test run on a curve (Fig. 13).

Person examined, three orbits after "eight" between two sociables remote from each other by 2 m to assess, the following criteria:

Table 4. Scoring for the execution of a test run on the curve.

2 points	1 point	0 points
≤ 90 seconds with no arrests and shoring	≥ 90 seconds or infrequent support the couch	≥ 120 seconds, or reliance on the couch at every turn

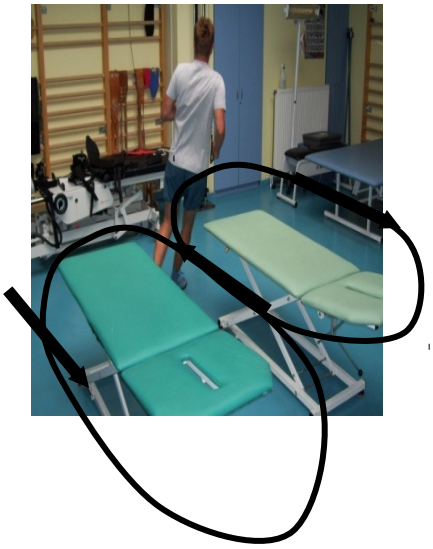

Fig. 13. Test run on a curve.

2. Hop test (Fig. 14).

Patient jumps with one leg in front. For the evaluation, the following criteria:

Table 5. Scoring for the execution of a test jump with one leg.

2 points	1 point	0 point
Jump easily over 60 inches	Difficulty with balance after a jump or a jump of about 50 -60 centimeters	Inability to maintain balance after a stroke, the need to attack the upper limbs by jumping or stroke length of 50 centimeters below

Fig. 14. Hop test.

3. Step test (Fig. 15).

Patient during this test, does the arrival and departure to the height of the first floor. For the evaluation, the following criteria:

Table 6. Scoring for the execution step of the test.

2 points	1 point	0 points
≤ 30 seconds without difficulty	For 30 seconds or movement of the support	Of ≥ 60 seconds, or moving the legs for putting

Fig. 15. Step test.

Fig. 16. Step test.

4. Subjective assessment of patients.

Patients answered questions concerning the subjective evaluation of his condition, a year after initial operational treatment - rehabilitation. For this purpose, the commonly used scales: Lysholm-Gillquist, 2000 IKDC (International Knee Documentation The Committee) Subiective Knee Evaluation.

Scale of Lysholm-Gillquist, is the point scale taking into account the performance status knee during activities of daily living.

Table 7. Lysholm-Gillquist - Score criterion.

Lysholm-Gillquist	
98 -100	Exelent
97 - 93	Very good
82 - 92	Good
66 - 81	Satisfactory
≤ 65	Insufficiently

The International Knee Documentation Committee = IKDC is subjective scale used to assess the level of function. Questions were related to symptoms, sports activity and knee function. Total points filled the position is divided by the maximum total score of all questions and multiplied by 100.

$$\text{IKDC Score} = \frac{\text{Total points filled the position}}{\text{Maximum total score of all questions}} \times 100$$

Scale is interpreted so that the 100 is no limitation in activities of daily living or sports activity or no symptoms. Higher scores indicate a higher level of function and lower levels of symptoms.

Satisfaction with Life Scale SWLS is a subjective assessment of quality of life, where the patient is responsible according to their own feelings. Depending on the answers are awarded points, and the sum of these points reflects the state of satisfaction with life.

Table 8. Scale SWLS - Score criterion.

Satisfaction with Life Scale SWLS =	
35 - 31	Very satisfactory
30 - 26	Satisfactory
21 - 25	Unsatisfactory
20	Matter
15 -19	Slightlyis not satisfactorily
10 -14	Not satisfactory
5 - 9	Not very satisfactory

Results and discussion

Results of measurements circuit of the lower limbs.

Muscle medial is built in 75% oxygen-free type I fibers, which require constant and regular activity. The largest observed atrophic changes in the fibers of red in the first week of immobilization. Muscle circumference can be reduced by several centimeters, and the strength shows a decrease by 25% compared to baseline. The reason for this may be the short duration of rehabilitation performed ACL reconstruction, translated by the respondents need to return to work.

To assess statistical differences between the distributions of quantitative variables in the three measurement circuits are used Student's t-test for the treated leg and nonoperated.

As statistical significance was p value ≤ 0.05. The difference was statistically significant at p <0.0001 for measuring circuit 1 and circuit 2 in the case of the measurement circuit 1 is the fact that no fully restored muscle mass at the height of the medial head of the quadriceps muscle.

When measuring circuit 2 and circuit 3 a trend towards an increase in average value in relation to the leg nonoperated, where the difference in circumference 3 was statistically significant at p <0.0001 (Table 9).

Table 9. Comparison of circuit 1, circuit 2, circuit 3 Surgical management of the treated leg, by Student's t test.

Parameter	**Leg surgery (N = 50)**		**Healthy leg (N = 50)**		**P**
	M	SD	M	SD	
Circuit 1	46,10	4,03	47,09	4,02	<0,0001*
Circuit 2	39,76	3,37	39,63	3,26	0,3620
Circuit 3	39,15	2,81	38,54	2,71	<0,0001*

Flexion angle measurement results the knee.

Necessary condition for the functioning of the pond in the full range of motion is the proper placement of the bone, consistency and flexibility of the joint periarticular structures. After immobilization and reconstruction changes occur in these structures. The synovial membrane fibrosis is accompanied by fusion recesses, and their proper placement is necessary to achieve the full range of joint mobility.

Angle of flexion in subjects for the operated limb and nonoperated proved to be statistically significant at p <0.0001. Based on the results, it was observed that both the active bending angle measurements for the operated limb and the limb is not operated fallen below the standard. Average score of the operated leg bending angle is close to the legs are not operated. Due to the fact that all subjects showed a full extension of the knee compared to the operated extremity, this result was not included in the table (Table 10).

Table 10. Comparison of active flexion angle of the operated leg and healthy, using the Wilcoxon test.

Parameter	Leg surgery (N = 50)		Healthy leg (N = 50)		P
	M	SD	M	SD	
Angle of flexion	120.10	18.06	125.90	14.42	<0,0001 *

Results from MTD Control Strain gauge platform.

This study used strain-gauge platform MTD Control Physio-Feedback software for Windows to determine the pressure on the lower limbs and the index of symmetry (WS). Thanks to this last parameter was obtained as burdening the lower limbs. The first attempt was made with open eyes, and the other with closed because the lack of proprioceptive information may be partially compensated by sight. Proprioceptory located in the muscles and tendons provide information about tone brain muscle. In this way we know how our limbs are arranged with closed eyes.

To assess statistical differences between the results of the symmetry index of the test with eyes closed and open, used a nonparametric Wilcoxon test. The level of significance was p value ≤ 0.05. The difference was not statistically significant.

During the study, patients received the WS with open eyes the mean value of 1.09 and 1.12 with eyes closed. All values are within normal limits, but with closed eyes of the subjects obtained worse results (Table 11).

Table 11. Comparison of the results of the symmetry index (WS) platform MTD Control for the study group with eyes open and closed, using the Wilcoxon test.

Parameter	Eyes open (N = 50)		Eyes closed (N = 50)		P
	M	SD	M	SD	
WS	1.09	0 , 07	1.12	0.10	0.1166

Strain gauge results from the chair MTD Control.

Setting foot in extension causes tension most superficial fibers of the ACL and PCL fiber rear. Hyperextension knee ACL fibers increases the tension in the mechanism of their lateralization intercondylar notch roof. The range of motion in the joint between 30° and 60° tension of both ligaments is similar. Increasing the range of flexion increases tension and recruit more fibers of PCL, while relaxing the ACL. With the knee flexed 90° over most of the fiber is strained PCL and ACL, only a few fibers of the superficial portion of the front.

At an angle of 30° to the extensor muscles made two attempts to open one in the chain and the other in a closed chain of 8-minute break between (Table 12).

For statistical evaluation Wilcoxon test was used for comparison of the operated leg with leg not operated on. The level of significance was p value ≤ 0.05. The difference was statistically significant for the second sample in a closed chain.

Table 12. Comparison of the results on a chair leg load cell operated Control MTD and healthy for the extensor muscles at an angle of 30°, using the Wilcoxon test.

Parameter	Leg surgery (N = 50)		Healthy leg (N = 50)		P
	M	SD	M	SD	
The emphasis in the N (30^{O}) open string	71.64 141.47 57.13 0.7246	149.77			
Emphasis in% (30^{O}) open string	51.27	7.75	48.60	0.4780	8.02
Field area. (30^{O}) open string	1797.31 3540.64 1420.02 0.8130	3738.54			
Emphasis on N (30^{O}) closed chain	138.75	125.28	65.24	52.38	0.0333 *
pressure in% ($30^{O)}$closed string	52.54	8.69	47.27	0.0288	9.65*
Field area. ($30^{O)}$closed chain	1630.50 3131.09 1309.01	3467.77			0.0333 *

Movement performed in an open kinematic chain has a greater speed and freedom of movement, but less stability. However, traffic carried in a closed kinematic chain is a more stable and less acceleration. Involved are larger muscle groups that work vice versa, where the final trailer is the beginning, and the initial end.

To assess the statistical comparison of the extensor muscles of the symmetry of the chain and closed the Wilcoxon test was used. The difference was not statistically significant (Table 13).

Table 13. Comparison of the results of the symmetry index (WS) in the chair for the load cell MTD Control extensor muscles in the chain of open and closed treatment group, using the Wilcoxon test.

parameter	Open string (N = 50)		Closed chain (N = 50)		P
	M	SD	M	SD	
WS (30^{O})	1.31	0.28	1.37	0.38	0.3640

At an angle of 60° to the extensor muscles made two attempts to open one in the chain and the other in a closed chain of 8-minute break in between.

To assess the statistical test was used Wilcoxon test for comparing the operated limb of the operated limb. The level of significance was p value ≤ 0.05. The difference was statistically significant for samples in open and closed strings.

Analyzing the mean values of pressure for all the designated parameters it was found that higher values were achieved through the operated limb (Table 14).

Table 14. Comparison of the results on a chair leg load cell operated Control MTD and healthy for the extensor muscles at an angle of 60°, using the Wilcoxon test.

Parameter	Leg surgery (N = 50)		Healthy leg (N = 50)		p
	M	SD	M	SD	
The emphasis in the N (60^O) open string	81.31 173.45 67.73	187.92			0.0148 *
Pressure in% (60^O) open string	51.61	48.39 7.90 0.0254	7.90		*
Field area (60^O) open string	2032.48 4333.87 1693.22	4695.64			0.0148 *
Emphasis on N (60^O) closed chain of	77.46 174.63	191.52		65.60	0.0066 *
Pressure in% (60^O) closed string	52.24	47.76 8.27 0.0267	8.27		*
Field area (60^O) closed chain	1935.61 4364.60 1639.45	4786.45			0.0066 *

To compare the results of statistical evaluation index for the extensor muscles of the symmetry of the chain and closed the Wilcoxon test was used. The difference was not statistically significant (Table 15).

Table 15. Comparison of the results of the symmetry index (WS) in the chair for the load cell MTD Control extensor muscles in the chain of open and closed treatment group, using the Wilcoxon test.

parameter	Open string (N = 50)		Closed chain (N=50)		p
	M	SD	M	SD	
WS ($60^{O)}$	1.32	0.36	1.34	0.9494	0.45

Lower limb muscles after immobilization or trauma should be rebuilt in three planes of movement, so it comes to muscles: quadriceps, ischio-shin, gastrocnemius, and the muscles bending, dissuasive and bringing to the thigh and the muscles of the thigh and leg twisting

In the position of lying face to the flexor muscles was performed two tests, one in the open chain and the other in a closed chain with 8 minute break in between.

For statistical evaluation for comparison of the operated limb with the limb not the operated Wilcoxon test was used. The difference was statistically significant for both trials. By analyzing the average values of pressure for all the designated parameters it was found that higher values were achieved through the operated limb (Table 16).

Table 16. Comparison of the results on a chair leg load cell operated Control MTD and healthy for the flexor muscles, using the Wilcoxon test.

Parameter	Leg surgery (N = 50)		Healthy leg (N = 50)		p
	M	SD	M	SD	
The emphasis in the open chain N	96.87	69 78	78.90	62.23	0.0003 *
Pressure in the open string, %	56.04	43.96	10.91	10.90	0.0005 *
Field area open string	1743.85 1971.91 1555.34	2421.07			0.0003 *
Emphasis in a closed chain of N	82.70	50.56	33.45 0.0095	70.77	*
Pressure in a closed chain	53.53%	10.71	46.47	10.71	0.0088 *
Field area closed chain	1263.62 1768.68 835.88 0.0095	2066.77			*

For further statistical evaluation according to the Wilcoxon test was used for comparison of two tests for the flexor muscles in the chain of open and closed. The difference was not statistically significant (Table 17).

Table 17. Comparison of the results of the symmetry index (WS) in the chair MTD Control load cell in the chain of open and closed for the flexor muscles in the study group, using the Wilcoxon test.

Parameter	Open string (N = 50)		Closed chain (N = 50)		P
	M	SD	M	SD	
WS	1.61	0.90	1.50	0.3751	0.64

Fitness comparison of test results of the research group with the control group.

variability of studied parameters are presented as the arithmetic average based on total points obtained in the test fitness or test group and controls (Fig. 17).

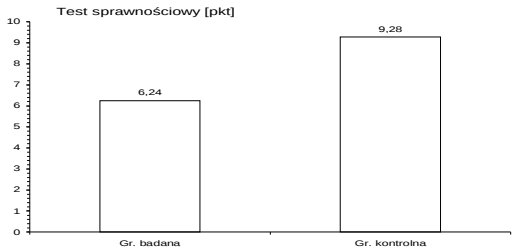

Fig. 17. Comparison of test results conducted for fitness test group and control subjects.

Subjective evaluation results.

Variability of studied parameters are presented as the arithmetic average based on total points obtained in the assessed SWLS, Lysholm-Gillquist, IKDC for the test group and control subjects.

Fig. 18 shows the total points scored in different scales SWLS, Lysholm-Gillquist and IKDC detailing for the research group and controls.

Scale SWLS quality of life, in which subjects responded according to their own feelings. Depending on the reply to be awarded points, and reflected the sum of their state of satisfaction with life. The study group was in the range of points 21 - 25, which means unsatisfactory state of life, while the control group between 26 - 30, this result indicates a satisfactory state of life.

Scale of Lysholm-Gillquist served to the subjective evaluation of the efficiency of the knee during daily activities . The research group has done well and was in the range of points 82 - 92, while a very good control group, which corresponds to 93 - 97 points.

In the case of IKDC, which is used for subjective assessment of function in activities of daily living. The result closer to 100 points indicates a higher level of function and lower levels of symptoms. The research group has obtained an average value based on total points accumulated, which is 74.04 points and 81.62 points of the control group.

Quality of Life Scale SWLS, in which subjects responded according to their own feelings. Depending on the reply to be awarded points, and reflected the sum of their state of satisfaction with life. The study group was in the range of points 21 - 25, which means unsatisfactory state of life, while the control group between 26 - 30, this result indicates a satisfactory state of life.

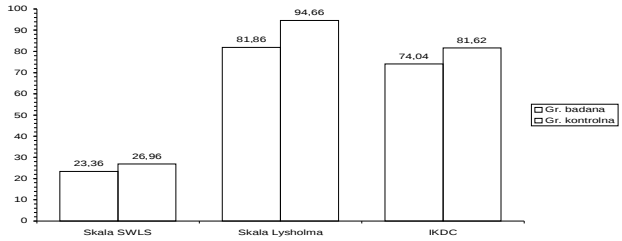

Fig. 18. Comparison of results obtained in different subjective scales for the test group and control subjects.

Comparison of results obtained by research groups in the test and control group and in individual fitness subjective tests: IKDC, Lysholm-Gillquist, SWLS.

This indicates that the control group fared significantly better than group studied. To assess the progress of rehabilitation of patients and the efficacy of knee injury, it is useful to compile test results of people with the measurement results obtained in healthy individuals, which constitute the norm (Table 18).

Statistical inference was used to test Mann-Whitney U test for the comparison group and control group . Statistically significant differences between groups in the test fitness, Lysholm -Gillquist and IKDC at $p < 0.0001$.

Table. 18. Comparison of results obtained in individual tests and test sprawnościowym subjective test group and control group, using the U test Mann-Whitney test.

Parameter	Gr studies (n = 50)		Group control (n = 50)		P
	M	SD	M	SD	
Fitness Test	6.24	1.71	9.28	1.77	<0.0001 *
Scale SWLS	23.36	5.47	26.96	5.29	0.0015 *

Scale of Lysholm	81.86	94.66	11.39	9.11	<0.0001 *
IKDC	74.04	81.62	9.85	9.73	<0.0001 *

Summary

To assess the stability and disorders of the knee proprioception after ACL reconstruction studied in strain gauge platform MTD Control. Strain gauge platform, which is a method for measuring the force on the ground. In patients with mobility impairments who comes to the problems of automatic postural control mechanism.

Following rehabilitation literature relating to methods of improving the various disease entities, you will find publications on the use of the symmetry index (WS) in assessing the results of rehabilitation of patients with hemiparesis, and even after the amputation. This method satisfies the conditions of security, objectivity, clarity and simplicity in implementation and applicability to all cases. Therefore, we attempted to use this method for patients after ACL reconstruction to assess the congruity of the joint and the effects of rehabilitation.

Introduced measurement with eyes closed, is to examine and compare the deep sensation that subjects behave similarly in different conditions. Proprioceptors bodies are located in the muscles and tendons. Provide information about tone brain muscle. Thanks to this sense, we know how our limbs are arranged, without looking. The lack of proprioception can be compensated in sight. As already known, immobilization of the body, injury to soft tissues disturb proprioception. Its restoration is one of the most important tasks of the whole process of rehabilitation.

After determining the symmetry pointer can be concluded that the test group traveled through rehabilitation after arthroscopic repair surgery not only improved the stability of the knee, but also improved proprioception in healthy volunteers.

Destabilization quickly compounded by the fact muscular atrophy motor supplying the knee joint, which act as active stabilizers. Muscles also belong to proprioceptive sensory organs. Muscle-tendon unit, which ensures the proper functioning of dynamic stabilization, as well as protecting the joint from injury and normal motor coordination.

Rating muscle flexors and extensors of the knee for both research and control groups was performed using a strain gauge seat MTD Control.

For rectifiers in the position seated subjects performed two tests, one in the open chain and the second in the chain is closed for three angles: 30° and 60° and for the flexors in the front lying position after two attempts, one in the open chain and the second in the chain closed. To assess the functional result of a statistical test, the seat load cell MTD treatment groups Control, adopted the mean load of the lower limbs, expressed in [N]%, and a designated area under the graph. In

addition, a sample of the index of symmetry (WS), similarly as in the study at the MTD Control Strain gauge platform to investigate the actions of the knee. Adopted as the result correct value located in the range from 1.00 to 1.15. Using the symmetry pointer can not be compared with data in the literature, which is not possible to draw further conclusions. Nevertheless, it was decided to use in the study of the anterior cruciate ligament reconstruction for the functional assessment of knee joint congruity and operational effects of the treatment and rehabilitation.

In search of answers to research questions were compared to results of the treated leg for nonoperated in the research group and attempts to open chain, closed chain. In this way, an analysis of the rectifier in a chain of open and closed chain in three angles: 30° and 60°, and the flexor muscles, lying on his stomach, analogous open-chain and closed chain.

Receiving:

Results of extensor muscle strength expressed as an angle of 30° in a closed chain, the operated leg compared to the leg nonoperated and the calculation of the area under the graph, the relationship was statistically significant. Comparison of the symmetry index (WS) in patients and control groups, was statistically significant.

Results extensor muscle strength expressed as an angle of 60° in a closed chain when trying to compare the operated limb to limb nonoperated and research group with the control group were statistically significant.

Situation this can be effectively carried out due to rehabilitation and return to the vastus medialis muscle efficiency. The head of the medial quadriceps muscle is 75% oxygen-free type I fibers, for example in the head side of the muscle, only 50%. Slow fibers require continuous and systematic activity, which makes the immobilization comes to their extinction. From our research shows that this muscle plays an important role in the movement for straightening the angle of 60°.

Better result in a closed chain may indicate that the closed kinematic chain involved large teams of dynamic and play a more functional movement patterns and are characterized by an increase in the components of forces in to shear, which is important in improving the regenerating graft. They also provide a better, dynamic stability, simultaneously activate agonist muscles, synergistic and antagonistic.

Measurement flexors measured in the position of lying on his stomach as compared to the operated limb from limb Surgical management for the parameters of force, expressed in [N]%, area under the graph set for two trials in a chain of open and closed chain were statistically significant at the assumed significance level of $p \leq 0.05$.

Now known that after injury knee lower leg muscles need to be reconstructed in three planes of movement. Therefore, in the process of rehabilitation should be aware of these muscles, which include: quadriceps, ischiorectal-shin, gastrocnemius. Pay attention to the muscles straightening, bending, dissuasive and bringing to the thigh and the muscles of the thigh and shin twist. These groups work together, and their proper relation to each other is essential for the proper function of all limbs.

Among the reports of recent years, the belief prevails that a greater emphasis on exercise in the open kinematic chain exercises should be placed on the ischio-tibial muscles, because they strengthen the antagonistic balances ACL action to quadriceps, a view O'Connor. According to Hagner weakness ischio-tibial muscle in relation to quadriceps muscle has a significant impact on worse outcomes after ACL reconstruction. In studies of the author obtained results showed impaired homeostasis between strength knee flexors and extensors, which proved to be the cause of worse outcomes in the group fitness patients after ACL reconstruction.

In studies of authors and contributors Stolarczyk situation was different in the operated knee flexors, which were observed more deficit in their strength in relation to the rectifiers. Stolarczyk important in the study is that the tendons were taken to the ACL ligament reconstruction with semitendinosus and gracilis muscle, which could give increasingly weak flexor than extensor. In our study, the material collected for the graft, the patellar tendon was free and it could contribute to a significant weakening of the rectifiers in the operated limb compared with the control group.

Used fitness tests (40 m run, the test stops, the time between socials, hop test and step test) in order to assess the functional status of the patient. The analysis of studies found that study group fared well on average, while a very good control group, followed by scoring his own.

Equity in the selection function tests confirmed the authors, who in their studies to assess the functional used a similar test. Tegner evaluated the efficiency of the knee after ACL reconstruction on the basis of three tests: a test speed on a curve, a test jump with one leg and stair climbing test. Development of research Tegner fitness tests are described by Kwiatkowski, which added to the above tests: a test to stop the run. However, most tests of fitness after the comprehensive treatment and rehabilitation Operations ACL reconstruction described by Górecki et al, who evaluated the efficiency of the knee based on the following tests: gait test set crookedly on his knees, stopping the run test, slalom test, the test speed of the rapid change of direction of motion, the test jump with one leg and a test spin on one leg.

Matuszewska, Tomczak studied group of patients after ACL injury, to assess the effects of rehabilitation. The study group Tegner analyzed the clinical test Lysholm-Gillquist and by functional tests, which were used to assess the functional status of the operated limb. The study

included physical fitness: running between two parallel set tables, stopping the run length of 2 meters, standing jump, and climb stairs to a height of one floor. A group of researchers applied the scoring by Kwiatkowski: very good 20-16 points, good 15-12 points, enough points 11-8, evil - less than 7 points.

In this work, to assess the patient's health status, subjective scales commonly used: Lysholm -Gillquist and IKDC. Olejniczak and Wrzostek, on the basis of their published studies that carried out the rehabilitation is beneficial for subjective evaluation of clinical status in patients with instability of the anterior ligament of the knee.

Subjective evaluation of the sustainability of the pond were made with the aid IKDC = The International Knee Documentation Committee. Questions were related to symptoms, sports activity and knee function. The result determined by the number of points. Subjects received after ACL reconstruction yielding satisfactory results on average 74.04 points, and the control group 81.62. Similarly, Stolarczyk, in their studies reported that the subjective assessment using the IKDC well most of the subjects assessed outcomes.

For comparison and evaluation of usefulness, introduced Lyshoma-Gillquist scale, in which patients answered questions concerning subjective evaluation about the performance of the operated knee. Item scale developed by Lysholm-Gillquist with the state of his knees during the performance of everyday activities and sports, have been examined clinically and static by Gorecki and Kwiatkowski, and these studies have confirmed its practical usefulness.

Dysfunction of the knee due to ACL damage is related to not only with the mechanical instability of the pond, but also with damage to the ligament receptors are responsible for proprioception of the joint.

Assessment of muscle strength is an objective quantitative method, which also allows you to specify other characteristics of muscle function such as work, power and endurance.

Used functional tests include assessment of the behavior of the tested during the execution of specific motor tasks. In this case, a measure of dysfunction of the exercise is to determine the asymmetry parameter examined. The performance tests used measured the execution time. The measure of dysfunction is extension of time for the task in relation to healthy limbs or the standards for a population of healthy people.

Interesting form of evaluation is an introduction to the study Strain gauge measurements on a platform in order to determine the rate or pressure load of limbs to the ground, which gives the possibility of quantitative evaluation and detection of subtle asymmetry. The weak point of these tests is insufficient knowledge about the function of the test before the trauma of the limb, and has a

significant influence on the result obtained by the test. All tests on the overall function of the device and do not focus on assessing the function of a particular joint.

In assessing the results of treatment of anterior-posterior instability of the knee should include an assessment of many elements that affect the function of the knee. The assessment should be classified in a subjective evaluation, using appropriate forms, assessment and evaluation of postural control parameters, strength-endurance extensor muscles and knee flexors.

Conclusion

The aim of this study was objective and subjective functional assessment of patients with a history of operational management - rehabilitation because of anterior cruciate ligament injury. The results provide evidence for an effective, objective and universal method of testing, but not exempt from further exploration.

On the basis of own research work the following conclusions:

1. The proposed study design is an effective and objective method for assessing the functional state of the knee after ACL reconstruction.

2. The used fitness tests can be useful for assessing the functional status of patients after ACL reconstruction, which is confirmed by the subjective assessment of the patient.

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SOCIETY TOWARDS FOR PEOPLE WITH DISABILITIES
Społeczeństwo wobec osób niepełnosprawnych

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Słowa kluczowe: niepełnosprawność, postawa społeczna, stopnie niepełnosprawności, rehabilitacja.

Abstract

The problem of a dignified life is driven by the representatives of many scientific disciplines, for ill or disabled people, still needs emphasizing its importance. He who does not fit or capable, requires care, and commercialization of life, profit and loss balance in its favor, the cheaper it is for such persons to live separately. And in this way pushes sic lives of disabled people to shelters, nursing homes or hospitals. The term „disabled person" is a phrase many people interpreted ambiguously. This term is commonly referenced to each person (child or adult person growing up), which is not fully operational.

Article deals with people with disabilities, compared to the population of people with disabilities, people's attitudes towards disability.

Streszczenie

Problem godnego życia poruszany jest przez reprezentantów wielu dyscyplin naukowych, w odniesieniu do ludzi chorych i niepełnosprawnych, ciągle jeszcze wymaga podkreślania jego wagi. Ten, kto nie jest sprawny czy zdolny, wymaga opieki, a komercjalizacja życia, bilans zysków i strat przemawiają za tym, ze taniej jest, aby takie osoby żyły oddzielnie. I w ten sposób spycha sic życie osób niepełnosprawnych do przytułków, domów opieki czy szpitali. Termin „osoba niepełnosprawna" jest przez wiele osób wyrażeniem interpretowanym niejednoznacznie. Powszechnie określenie to odnoszone jest do każdej osoby (dziecka, osoby dojrzewającej lub dorosłej), która nie jest w pełni sprawna.

Artykuł traktuje o osobach niepełnosprawnych, stosunku społeczeństwa do osób niepełnosprawnych, postaw ludzi wobec niepełnosprawności.

„Every human being has a right to expect absolute respect of their basic good”…
(John Paul II, Evangelium Vitae)

Each, which is healthy and sick, more or less efficient. Although the problem of a dignified life is driven by the representatives of many scientific disciplines, for ill or disabled people, still needs emphasizing its importance. To focus on the problems of society against the disabled should explain what is a disability. How is it defined and how regarded. In ancient Greece, where there was the cult of beauty and fitness, sick or disabled babies were killed. Was determined by the father of a family or a council of elders. Healthy newborns turned over his mother, sick dropped from the rock.

Steeped in medieval Christianity changed the situation of sick and disabled to the extent that they were not killed, but giving them a place where they live and they could not leave. Sometimes this was due to the fear and as a way of defense, as in the case of lepers. In most cases, disability was viewed as a punishment for sin or demonic possession. Renaissance belief endured punishment for sin, and declared disability as a human thing, to which, man haven't impact. Renaissance also gave permission for begging, because in cities there sic a huge number of people living on alms sic.

This situation changed until the Enlightenment, then came the first attempts to sic institutional support, built shelters and hospitals, in which disabled people live in isolation from the environment. The current philosophy of life, and thus the cult of beauty and success is very much like ancient Greece.

The difference lies in the fact that it is a different kind of preset death. Several thousand years ago it was a physical death, and now it is social death. He who does not fit or capable, requires care, and commercialization of life, profit and loss balance in its favor, the cheaper it is for such persons to live separately. And in this way pushes sic lives of disabled people to shelters, nursing homes or hospitals. The term 'disabled person' is a phrase many people interpreted ambiguously. This term is commonly referenced to each person (child or adult person growing up), which is not fully operational. Recognizing that the issue of disability, you would need to qualify for the disabled, such persons. The elderly and infants - because of their inability to speak or move.

A law on social assistance in 1990 disability means "a state of physical, psychological or mental causes permanent or temporary impediment, limitation, or prevent independent existence" [2]. So, with one period will be determined by those who formerly belonged to an entirely different category.

From February 1, 2003 entered into force the provisions of the Act on the vocational and social rehabilitation and employment of disabled people. The amendment was adopted by the Sejm on December 20, 2002. The new regulations concern, among other things degrees disability.

The following definition:

A Strong degree of disability among ourselves to the efficiency of a person with impairment of the body, unable to work or able to work only in a sheltered and challenging to perform social roles, permanent or long-term care and assistance from other persons in connection with the inability to live independently.

A Moderate degree of disability - among ourselves to him, a person with efficiency disturbed body, unable to work or able to work only in a sheltered workshop or requiring temporary or partial assistance from other persons to perform social roles.

A Light degree of disability - among ourselves to the person who is disturbed the body's efficiency, resulting in a significant reduction the ability to work, compared to the ability, and shows a person with similar professional qualifications with full mental and physical fitness, or having limitations in performance of social roles, giving sic compensate with orthopedic equipment, aids or technical measures. In the most general terms, przyb1iające image of a disabled person, appears to be the person with whom there is a breach of performance and features to the extent specifically inhibiting (compared to healthy subjects in a given cultural milieu) to take education in normal schools, the activities of everyday life, paid work, participation in social life and activities in their leisure time.

In Poland there are nearly 5 million people with disabilities, which is about 15% of the population. The remaining 85% know little about human disability. Each of us has, however, some notion of human immunodeficiency.

This created a function in everyday life models of disability. Medical model is to perceive it as „case of the disease". So "health" is more important than the person. This model is negative, because it tends to generalize disability, while each person is different and unique and have different experiences.

Administrative model, linked closely with the government, local authorities imposed depend on the decisions taken by the ministry. It can be positive or negative. It depends on the economic situation of the country and the point of view of individual decision makers.

Model means giving money to charity. Many people give money to so-called. noble motives, allowing them to also feel a sense of well done. This model can be viewed as negative because it encourages people to the gate of responsibility for others.

Social model, the most desirable. It focuses on the man, and later on disability. Recognizes that it is responsible for the society. A disabled person has the same right to education, housing, transport and services as people healthy. She knows best what it needs.

Man is a social being, and only in society can fulfill their needs. Among the needs according to Maslow are distinguished three groups: physiological; psychological; and social.

Needs of society are at the top of the hierarchy and a person can strive to meet them only when necessary at the lower levels are met.

Where in the hierarchy is a disabled person?

To answer the This question should look sic basic social behavior. Place the individual in society depends on several factors: the family, religion, culture, residence, financial situation, economic activity, but also from the same unit, from its character and personality. This is how we perceive the other, a person very often depends on the other person as she is presented as it looks, what he says, as sic behaves. Looking at the man's first pay attention to his physical qualities. Physical attractive man often has more friends and people who are seeking to build contacts. Then

we look at whether it is a nice, if it is clear what his behavior. As a rule, the people choose their friends happy, optimistic, people who do not torment us with their problems. Finally, we look at it like preserves the CIS as a group, or a star or too gray mouse or so ,,sacrifice". As a rule, are seeking friends with ,,star", because it is easier to strikes. We will look at from this perspective sic persons with disabilities (especially physically). A significant problem can become ill as his physical functioning, often projecting on family functioning, which in turn affects his social functioning.

Physical impairment significantly shapes the person affected. Musculoskeletal deformities stigma affects all areas of life: self-esteem, the realm of experiences and actions, and above all the contacts with the environment. The self-image include: feelings of self-fed, the knowledge of himself, and based on ideas of others on this. Disability is the fate of minorities, the less personal image so formed. Create the "self" and that sic of continuous struggle with himself and able-bodied community. Exterior Features influence on the general impression of someone's personality. As stated by G. Ichheiser and B. Wright, determines the appearance of an assessment unit. The first evaluation, personality, you can not see, goes into the background. Assessment of the identity of the bases are the external features. Observation of physical variation influences the assessment of a person's personality, as well as to assess their circumstances (H. Larkowa, 1987, S. 28).

Second group of factors is being patient.

These factors affect the negative evaluation of his own being. The patient, often comparing their current health status with the state before the illness, as well as healthy people watching from their surroundings, experiencing on this background his otherness. These have the experience of a huge impact on his psyche, and can contribute to a sense of alienation in the social environment. A very important element influencing the psyche, and thus the social functioning of the patient, is to change its appearance. A different look, induces in others negative emotional reactions. This results in avoidance of disturbed view of the body, and often avoid the same person (H. Larkowa, 1987, p 29).

It can deepen a person sick sense of otherness, often resulting sic insulated from the environment, avoiding meeting people, sic closure to new contacts and, on the other hand, a strong devotion to sic on people's in short surroundings. person with a disability is manifested by a physical dysfunction, which is losing attractive (although it can also inspire curiosity), through his suffering and a sense of otherness may be due to a lower value. Therefore sic socially isolated and is well insulated. It is a stereotype of thinking, which of course is often wrong but it is still valid.

This stereotype has its origins in social attitudes.

Bases against people with disabilities may take various forms:

Full of tolerance and treat them on par with healthy (eg, marriage acceptance of disabled people healthy, collaborative work and leisure time). Total lack of tolerance towards people with disabilities and efforts to remove them from the circle of healthy people (putting special care in their homes, creating special companies, known to public opinion in the belief that disabled people feel sic best in our midst, ie, among people similar-skipping and failing to meet their needs, etc.).

Reactions towards people with disabilities can be classified according to the criteria: assessment-emotional-cognitive-related behaviors, this division may relate to the attitudes of both positive and negative. Negative attitudes towards the environment disabled people are typically motivated: difficulties in carrying out a number of invalids, normal “activities”; aesthetic and sexual aversion; tension and discomfort in dealing with handicapped; nontyping disabled.

Figure 1. Architectural barrier [1].

Invalids attributing negative characteristics of emotional and characterological, inability to establish emotional contact with invalid, fear of acquiring disability, empathy with suffering caused by the situation sic invalid, fear of the burden of being responsible in the case of maintaining contact with the disabled (eg, fear of marriage), the fear of social boycott caused by contact with invalid, fear of injury or heredity, feelings of guilt towards the disabled person (“I'm healthy”).

In shaping public attitudes towards people with disabilities or small role played by superstition or prejudices. Most superstitions was created for people whose disability is clearly visible (in people with impaired movement, with distortion visible parts of the body, eg the hump), the word is that if the body is defective, the same must also have disadvantages personality of the man. The causes of prejudice against disabled people relate, so did the customs and accepted norms of conduct, submitting physical fitness and health of the body than other values. Sic shaping attitudes towards disabled people play an important role, the following demographic characteristics social.

Gender. Women more than men to exhibit positive attitudes towards people with disabilities medically. Sic combines it with the traditional preparation of women for the role of carers, which meets the necessary functions of care to patients. Women are better able to empathize emotionally sic position of disabled people, often guided sic feelings and less likely than men judge people only in terms of their value, as co-partners in society.

Age. In some studies found that young people in contrast to earlier adopt a more favorable attitude towards disabled persons.

Level of education. People with higher education exhibit more positive attitudes towards disabled people.

Religion. It was found that, for example, Catholics in a higher degree than Protestants exhibit, tolerant attitude towards disability.

Occupation. Professionals requiring special physical conditions relate sic more negative for all types of disability.

Socio - economic status. This factor influences the attitude of upoś1edzonych only in relation to certain social groups.

Previous experience (resulting from contact with persons with disabilities). They found that the more positive attitude towards the physically impaired are found in those subjects who previously had more personal contact with people with disabilities in both private life and professional life.

There are three types of relationships between people with disabilities and society according to the place that sets to people with disabilities. The basis for such differentiation is the visibility of disabled people.

1. Society: “Spontaneous participation” - is typical of developing societies, in which disability and disability are not seen as important social problems, when there are many others that require rapid intervention (eg, hunger, disease infectious diseases, etc.). The presence of disabled people is the “visible”, but they did not participate on an equal footing with the rest.
2. Society: “Separation” - is typical for countries with a transitional stage of development - disability, disability is seen as a serious problem, but rather a medical than a social one. People with disabilities are, ,,invisible”, they are, or confined in institutions or at home.
3. Society: “Integration”. Disability determination in the European Union.

Fig. 2. Disability determination in the European Union [2].

Occurs in developed countries, the tradition of social rehabilitation for disabled people. Removal of barriers to social causes most people with disabilities is “visible” - can participate in society on an equal footing with others. People with disabilities are “visible”, fully capable, thanks to the numerous technical facilities, to an independent life in society (A. Ostrowska, 1983).

Polish society generally in favor of a model of integration, integrating people with disabilities to normally functioning social groups and institutions, together with the people

,,disabled”. What's more, you can say that accepting the integrative tendencies were much stronger in 1993 than in 1987. We can therefore speak of the increasing openness of our society for these people. Acceptance of integration solutions is not uniform in all spheres of life. This acceptance is most commonly manifested in relation to cohabitation in the same house and participation in cultural life and leisure. Less commonly, but in relation to work in one plant, and least in relation to inclusive schools for disabled children. Existing barriers to social attitudes, harmful stereotypes and distance towards people with disabilities, the function of knowledge about disability, the general level of education and personal experience in dealing with them. With the growth of all of these features is growing tolerance, acceptance, integration and versatile vision problems people with disabilities, as well as the perception of the role and responsibility of society as a marginalization disabilities. This demonstrates the default role of social education and the need for integration planes, thus allowing all kinds of structures, contacts of people with disabilities into society, to facilitate mutual understanding, learning proper response to disability and developing designs, being together "every day, they are also material terms of equal opportunities.

Fig. 3. Sheltered workshops [3].

Conclusions

In summary, despite the improved conditions that are created for the needs of people with disabilities continue to face them with an incomplete acceptance and many problems are not all healthy people are able to understand.

In the words of John Paul II "We are able to do great things if we will not let us beat the fear of his own weakness".

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REHABILITATION PROCEEDING IS COMMON AND DIFFERING IN DISEASE ENTITIES SUCH AS SCLEROSIS MULTIPLEX, PARKINSON'S, ALZHEIMER'S
Postępowanie rehabilitacyjne wspólne i różniące się w jednostkach chorobowych takich jak: stwardnienie rozsiane, Parkinson, Alzheimer

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Słowa kluczowe: choroba Parkinsona, stwardnienie rozsiane, choroba Alzheimera, rehabilitacja.

Abstract

Central nervous system diseases - Parkinson's disease and MS are similar to each other in terms of symptoms associated with hand movement, and also in terms of the rehabilitation. Multiple sclerosis is a chronic disease. Particularly vulnerable are young people on it. This disease has a very diverse clinical manifestations ranging from mild to very severe, characterized by periods of exacerbations and symptoms of weakness. Improving the movement is to treat deficiencies in mobility and the major symptoms of the disease. Parkinson's disease, in turn, applies to persons aged 50-70 years. Symptoms that are worse are the result of damage to neurons of the substantia nigra, resulting in a decrease in dopamine occurs. Rehabilitation should be carried out completely from the early period of the disease. Alzheimer's disease, in turn, affects intellectual functions of the patient. Alzheimer's disease has different goals than the other discussed the rehabilitation unit. Pay special attention to the behavior of the patient and provide it with adequate welfare, not to feel embarrassed and confused during rehabilitation. Do not forget to help the patient and giving him clues to how best to cope with the activities of daily living. The initial stage of rehabilitation in these disease entities have the same objective pursued by both patient and his family. On each day of rehabilitation should be paid attention to the stage of disease, to take appropriate treatment program.

Streszczenie

Choroby ośrodkowego układu nerwowego – choroba Parkinsona i stwardnienie rozsiane są podobne do siebie pod względem objawów związanych z układem ruchu, a także pod względem celu rehabilitacji. Stwardnienie rozsiane jest chorobą przewlekłą. Szczególnie narażeni są na nią osoby młode. Choroba ta ma bardzo zróżnicowane objawy kliniczne od łagodnych do bardzo ciężkich, charakterystyczne są okresy zaostrzeń i osłabień objawów. Usprawnianie ruchowe ma na celu leczenie niedomogi ruchowej i głównych objawów choroby. Choroba Parkinsona dotyczy z kolei osób w przedziale wiekowym 50-70 lat. Objawy, które się nasilają są konsekwencją uszkodzenia neuronów istoty czarnej, w wyniku czego dochodzi do spadku dopaminy. Rehabilitację

należy prowadzić kompleksowo już od wczesnego okresu choroby. Choroba Alzheimera z kolei dotyka funkcje intelektualne chorego. Choroba Alzheimera ma odmienne cele rehabilitacji niż pozostałe omawiane jednostki. Należy zwracać szczególną uwagę na zachowanie pacjenta i zapewnienie mu odpowiedniego komfortu psychicznego, aby nie czuł się skrępowany i zagubiony podczas rehabilitacji. Nie należy zapominać o pomocy pacjentowi i dawaniu mu wskazówek, aby jak najlepiej radził sobie z czynnościami dnia codziennego. Początkowy etap rehabilitacji w tych jednostkach chorobowych ma ten sam cel stawiany zarówno pacjentowi jak i jego rodzinie. W każdym dniu rehabilitacji powinno się zwracać uwagę na stadium zaawansowania choroby, aby podjąć właściwy program leczenia.

Illnesses of the central nervous system - the Parkinson's disease and Sclerosis Multiplex are similar to oneself in terms of the symptoms associated with the system of the move, as well as in terms of the aim of the rehabilitation. The multiple sclerosis is chronic illness. Peculiarly they are exposed to it young persons. This illness has clinical symptoms very much diversified than mild to very heavy, periods of sharpening and weaknesses of symptoms are characteristic. [1, 2]

Motor streamlining is aimed at curing motor deficiency and main symptoms of illness. The Parkinson's disease is regarding persons next in an age bracket of 50-70 years. Symptoms which are intensifying are a consequence of damaging neurons of the black being, what is reaching the inheritance of the dopamine as a result of. One should conduct the rehabilitation comprehensively already for the early period of illness. The Alzheimer's disease next afflicts intellectual posts of the sick person. The Alzheimer's disease has different cells of the rehabilitation than remaining discussed individuals. One should pay special attention to keeping the patient and providing for him adequate psychological comfort so that he doesn't feel tied and lost during the rehabilitation. [5]

One should not forget about the help to the patient and indicating for him, in order to how best dealt activities of the everyday day with. The initial stage of the rehabilitation in these disease entities has the same put target for both the patient and his family. On every day of the rehabilitation it is necessary to pay attention to the stage of the progress of illness in order to pass the relevant program of the treatment. [3]

Parkinson's disease - morbus Parkinsoni

This is spontaneous, slowly progressing, degenerative illness of the central nervous system which is characterized by movement disorders in different parts of a body. Still a well-known first, initial cause which is commencing the pathological whole process isn't in this illness, however changes which are stealing the sick person in the brain are known. The place called the black being is built from nerve cells (of neurons) responsible for producing the chemical substance called the dopamine. This substance is responsible for the coordination of locomotions and essential to send nervous stimuli in the extrapyramidal system. From the unknown until today nerve cells are starting

the reason to die. Along with the fall in the cell count dopaminergic, a number of the produced dopamine is being reduced, to critical values (20% of the output value), which clinical symptoms of illness are appearing by. [8]

Clinical symptoms in the Parkinson's disease: fremitus, stiffness, akineza: bradykinesia, hipokinesia, disturbing the motor coordination, disorder repeatable automates of motor conspiracies, disturbing the system of the rhythm of the movement, masked of face, disturbing the walk and the attitude, bulbar symptoms - dysarthria and disorders of swallowing, cognitive disorder, disorder praxis of spatial, problem of the learning and remembering, dementia, depression. [8]

Multiple Sclerosis - sclerosis multiplex

This is illness of the central nervous system, being characterized by a presence of scattered foci of demyelination in the brain and the spinal cord from at first passing, and then with strengthened numerous neurological disorders. Illness has scattered character. He consists in switching an insulating layers of nerve fibres on in various areas of the brain and the spinal cord. Destroyed layers cannot already recover. Into their place a hard scar tissue is coming into existence. Since she doesn't have the abilities to transmit, characteristic of the healthy tissue, disruptions or total blocking the correct transfer operation of signals by nerves are taking place. Neurological symptoms very much are added variety. Causes weren't established, but it is known that illness has immunologic base. [4]

Clinical symptoms in illness of the multiple sclerosis: disturbing the eyesight, disturbing the sense of touch, disturbing the coordination, spastic paralyses, disturbing the walk and balances, muscle weakening, fremitus limbs, general pain, disturbing the peristalsis, dementia, depression, disturbing the speech. Symptoms and symptoms of an illness, what is very characteristic exactly of Sclerosis Multiplex, they are very diverse and are a result of multicentre changes in the central nervous system.

Ranks among the most frequent symptoms: pareses, paraesthesias and disorders of feeling, optic neuritis and visual disturbances, double seeing (diplopia), ataxia (cerebellar or brain stem), disorders of the diuresis, intestinal disorders, vertigo, spasticity of muscles. [8]

At the part of persons suffering from the multiple sclerosis permanent disruptions of feeling stimuli through hands and feet, not to say the entire hands and legs are appearing. Sick persons are feeling limbs which seem simultaneously cold, heavy and insensitive to all impulses tingle. Distinguishing is a great difficulty hot and cold and acute and blunt. If so precision are generally speaking possible, it are taking place after the relatively long time. [9]

In almost the 40% of Sclerosis Multiplex cases is leading to the optic neuritis. As a rule one eye is touched, the walk is happening, that illness is attacking both eyes. Sick persons can see surrounding kind of by the fog, the image is blurred or dark stains are found in it. This symptom is yielding entirely or at least partly, in such a way that a return to the previous visual acuity is usually taking place. However if inflammation followed in part of ophthalmic nerve put right behind the eyeball, it is then a visual field perhaps to be limited. At Sclerosis Multiplex also paralysing optic muscles is appearing, what patients see double as a result of. [10]

One should rank also disorders of the intentional course of moves among other symptoms objects are dropping muscles which cause that patients from Sclerosis Multiplex often write indistinctly, from hands etc. Disruptions of feeling the balance are added to it, of which an unstable way of walking, uncertain sitting down and standing are resulting. At some sick persons an ability to say is also disrupted, in such a way that distinct pronouncing words is coming for them with the great difficulty. [10]

Alzheimer's disease

Alzheimer's disease is progressing neurodegenerative disease, which is seeking the course for injuring nerve cells in various areas of the brain as a result of the accretion into in them of protein substances (beta - of the amyloid and the white tau). It causes progressing loss of intellectual functions causing dementia.

Clinical symptoms of the Alzheimer's disease: dementia, disturbing the short-term memory, preciseness are lacking said words, deficit cognitive disorder neurological symptoms: manifestations of the parkinsonian syndrom, symptoms deliberation, problems or loss of the sense of direction in the time and space, capacity limitation of the evaluation and the decision making, problem in performing everyday functions, sudden changes of the mood and behaviours without more clearly causes, change of the personality, depression. [2, 11]

Rehabilitation Proceedings

In case of the multiple sclerosis one should start physiotherapy very cautiously. Burdening the patient with exercises must take place slowly and gradually. The undue hurry is leading the sick person to the decline of the state, not to say for loss of certain had still functions of the body. The physiotherapist, before beginning exercises, should conduct observation of the condition of charge and determine purposes, which it is possible and which it is necessary to reach. The plan of entire

therapy must be discussed directly with the patient. In this way he will stay motivated for the cooperation. It is valid for it especially in the initial phase of physiotherapy, when exercises are difficult for the sick person and connected with the strong effort. [4]

There are in the multiple sclerosis explicitly no effective drugs against disruptions of the coordination and contractures. However through the rehabilitation it is possible to achieve the distinct improvement in motor possibilities of the sick person, teaching him the concentration and the certain kind of the automatic course of the move. If only exercises consistently and repeatedly are being repeated, effects in this respect can bring intended effects to the rehabilitation. Treating patients with the multiple sclerosis is aimed: relieving results of the phase, preventing results of illness, eliminating symptoms. [8]

So far didn't manage to establish the pharmacological causal treatment into Sclerosis Multiplex, leading to full healing. From here motor streamlining constitutes one of basic components of the comprehensive rehabilitation. [8]

Reducing spasticity of limbs as well as the ataxia is a crucial objective of kinesipathies and physiotherapies. We are ranking among important factors, enabling the sick person on Sclerosis Multiplex like fullest of moving and performing the basic functions necessary in the daily living. A move is a load-bearing middle of the rehabilitation: both exercises active, conducted independently by the patient, as well as passive, at of which a physiotherapist is helping the performance.

The way of conducting the rehabilitation is dependent from the kind and the degree of disability. Every person ill from Sclerosis Multiplex requires the individual care and precise selecting exercises. Main, shared and with basic aim for all three disease entities, before the accession to exercises a show is a stage for the patient and his family how the process of streamlining is supposed to look. Patients often feel lost, bent with increased symptoms of illness and often aren't truly conscious what around them is happening, therefore informing of the course therapy should be the first step of the psychotherapist. Before the accession to every next stage short leading into the proper training should also be I and appropriate proceedings rehabilitation what cells in a given disease entity and introducing and explaining a rehabilitation is supposed to serve, because sick persons can at some point being into advanced stages of illness to forget or not to want to participate in the rehabilitation. The psychotherapist should closely observe and often comment on performed functions with the patient because it is of help very much by teams dementia, dementias or depressions co-occuring with given illness. Just enough of achievement of the programme therapeutic the sick person should learn maintaining a balance in all basic positions of the body. For the achievement of this aim it is possible to apply the rehabilitation equipment of different kind like e.g. pads sensomotoric or rehabilitation balls. [7]

The physiotherapist should pay attention even to the lowest kind of contracture. Every contracture in combination with the myasthenia is leading mobilities at a fast pace to the restriction, not to say to the total powerlessness of independent bringing up oneself. During rehabilitation should concentrate not only on muscles directly touched with the spasticity, but also on of these attacked regions being in the vicinity. One should remember that in the spasticity we are beginning exercises with big joints and then we are going to smaller. In case of patients with the myasthenia he belongs make attention, whether the sick person isn't threatened with bedsore. [7]

A move is a load-bearing middle of physiotherapy: both active, conducted independently by the patient and passive, at of which a psychotherapist is helping the performance.

Parkinson's disease and Sclerosis Multiple are illnesses very much moved close in terms of rehabilitation proceedings. A prevention of contractures and a learning of new motor standards are main pillars of streamlining sick persons needed for independent advising oneself in the everyday life, and through the development which illnesses were lost.

Together for these disease entities it is possible to apply motor streamlining under the figure: - of respiratory exercises - of exercises pasive - active, active - depending on the stage of illness and muscle strength of the patient - of equivalent exercises - learning of the walk - of coordinating exercises - of exercises with the music - of exercises in the bedpan - of massage - in case of the multiple sclerosis every type of respiratory exercises is shown the hippotherapy. Contractures and the weakness are also touching the torso and muscles of the chest and the diaphragm. The lack of the move is leading work outputs of lungs next to the reduction. Regularly performed respiratory exercises are hindering progress of illness in this direction. Apart from that they have preparing character for conducting other stages of physiotherapy. One should draw respiratory exercises up this way so that the patient can carry them out also independently. [10]

In physiotherapy proceedings also a hydrotherapy will matter greatly. Move in the water or even - if it is possible - swimming are an essential part of physiotherapy. The patient, suffering incessantly to disruptions of the balance of the body and contractures, during hydrotherapy has feeling the greater confidence and the control over its body, because water is curbing sudden and unchecked movements. [7]

Moreover sick person being in the water, losing weight seemingly, he can move with the much greater easiness than usually and less power needs the body for keeping its balance. That is performing exercises in the water, the patient experiences the better effectiveness of his effort. The move in the water constitutes the soundness of the preparation for typical more difficult therapeutic exercises. Also a hippotherapy constitutes valuable supplementing classic methods of

physiotherapy. Horses should however belong to calm, so-called "cold-blooded" of races (e.g. hucul, or icelandic horses). They must also appropriately be trained. [4]

Exclusively specialists can conduct therapy, and the patient all the time must be under control. The ride on the horse is a very pleasant experience for the sick person. He reduces muscle tensions, helps keep his balance, reinforces the self-confidence and motivation for the follow-up work. The participant in classes sits on the horse without using the snare. In this way the movement of the animal is transferred directly to the rider. One should also emphasize that very contact with horses already influences the majority of sick persons refreshingly and soothingly. [8]

During the rehabilitation in both illnesses we aspire to like biggest become independent of patient by stabilizing a standing position and improving the race walking. Teaching comprehensive motor programs what is characterized by synchronizing more than one move, what is of help in a performance of activities of the self-service and the everyday day. Through verbal commands we teach the mechanism automating moves.

Main principles of joint rehabilitation proceedings in Sclerosis Multiplex and Parkinson - active keep fit exercises should be begun already at slight disease symptoms and conducted in the consistent way - it is necessary to select exercises individually to the state of the patient - one should update the exercise programme in accordance with the needs of sick person - exercises are conducted so that an alternating diagonal tension and relaxing muscles take place. One should always involve also not-attacked groups of muscles and healthy parts of a body - we always start with the simplest exercises and gradually we increase of melting of the problem - if only it is possible, the patient should exercise on the tough basis (not in the bed) - extremely a cooperation of the patient is significant from very beginning of physiotherapy - through exercises the patient should get certain practical abilities, so as: socializing from the side aside, sitting on the edge of the bed with legs left to the floor, walking with the help or on one's own, the independent food.

During the rehabilitation in Sclerosis Multiplex illness one should very much cautiously get some more burdening becoming streamlined, because too fast desire for the assistance can take the different effect back by the degradation of the patient as well as losing had still functions. At the part of persons suffering from the multiple sclerosis permanent disruptions of feeling stimuli through hands and feet not to say the entire hands and legs appear. Sick persons of feeling tingling in limbs which seem simultaneously cold, heavy and insensitive to all impulses. Distinguishing is a great difficulty hot and cold and acute and blunt. Therefore during the rehabilitation e.g. a mug overloads itself with special pads so that in this way objects are heavier and simpler in using for the sick person.

With something characteristically in motor streamlining in both illnesses is different learning of beginning the movement in the disease of Parkinson, because these patients just have a considerable problem with it, and in Sclerosis Multiplex he isn't so noticeable. The help in beginning the movement can be through the verbal command through the chosen point on which the patient focuses and aspires to it, be e.g. forced through the obstacle or triggered with electric stimulus which the contraction of leg muscles causes. Proceedings kinesiotherapeutic in the Alzheimer's disease doesn't include many fields of streamlining the sick person this way like in two higher discussed disease entities apart from the advanced stage of illness, in which the patient is a lying person. It results from different aims of streamlining in these illnesses - because Alzheimer leads surroundings to cognitive disorders, but so firmly n doesn't influence organism in terms of restrictions as physics as Parkinson or Sclerosis Multiplex. similar symptoms can in this illness appeal to the Parkinson's disease manifesting itself with fremitus of limbs, but it isn't frequent, therefore the rehabilitation of such patients exactly isn't characterised, and it is hard to predict, what direction illness will pick. Mainly are these are people which alone move, but their disability consists in memory disappearances, dementia and dementia. When illness is a stage already in the advanced of course they aspire to for counteracting of contractures and bedsores, if the patient is lying. Here the strong emphasis lies down for making the everyday life of the patient easier by using slips of paper e.g. with inscriptions, what, where is, applying the electronic clock, when there are problems with reading the hour to the end, applying big vessels, of mugs, one should avoid moving the thing at home and not ask sick persons problematic, complicated questions in order not to trigger stress situations at them, problematic. In the fight against disorders e.g. a big wall diary, on which the sick person will be able to mark dates is of help to a memory.

Aims of curing teams dementies there is an improvement in the scope: Possibilities of the cognitive behavioural disorder functioning of the everyday day.

The rehabilitation consists in making the everyday life easier by performing given functions systematically and in the same time e.g. settling physiological needs before meals, in front of the bed. One should give clear commands to the patient and often repeat. He is very important, in order to not plaintiff's of stress situations and not luxurious for the patient because of May they disturbed cognitive perception and badly situations often interpret data. As for exercises there are no specified special therapeutic exercises for the Alzheimer's disease. Streamlining should individually be fitted for the given patient and of his stage of illness and isn't based on general-developmental keep fit exercises keeping the mobility in joints.

Exercising being in the position on the back Ob River upper limbs under the head, a right/ left lower limb is straightened, left / right lower limb remains bent in the knee. The pelvis on the

side of the bent limb stays raised all the way to the extension in the hip joint Move of the passage from lying on its back to lying on its stomach Ob River lower limbs are bent and arranged on right / nearside. Shoulders are straightened arranged above the head. Laws / left upper limb confers the dash, the head stays raised and rotated, the shoulder stays transferred aside of put lower limbs. The assault should be so big so that it comes off to achieve putting aside. After leaning one hand, both lower limbs they are being erect, next a remaining part of a body is rolled, all the way to the position on the belly.

Stretching exercises

Every of stretching exercise should be held, for at least 10 seconds.

It will stand up by the table with hands leaned against the table top (straightened squares). The sick person straightens upper limbs out in an elbow joints, a weight moves bodies ahead what increases you will stretch muscles.

Of training in illness the multiple sclerosis Learning of the walk the sick person exercises walking using railing, on which he finds support in both hands during put of steps.

Of training in lying on one's back - passive exercises – active -.passive the patient lies on his back on the tough basis. Legs are straightened, hands sit down along the body. The psychotherapist catches with one hand from the bottom exercising the foot, second leans against his knee. Next cautiously he raises the leg of the patient in the direction of his chest, bending I simultaneously in the knee. Return to the home position. After repeated repeating the move a change of the leg takes place.

Equivalent exercises patient sits on the therapeutic ball. Psychotherapist standing by the patient helps him conduct exercises of the balance. At first exercising holds on with both hands of the ball, but feet leans against base. They next proceed to more difficult exercises and reduces the support, raising hands and legs one by one.

In the Alzheimer's disease of training our memory we perform exercises with the patient set of exercises supporting the process of remembering, associating reconstructing and teaching. With important means of exercising the memory of the sick person, and at the same time pleasing him, providing for him different intellectual and manual classes is. Sick persons like to press something in hand, it is possible, so to give them the handkerchief, the ball or scraps of materials. With fitter sick persons it is possible of garden hoes into cards, dominoes, to mould plasticine, to complete building blocks, to draw and the like Some sick persons can also do straight quizzes or crosswords. [12]

General developmental exercises it can be straight, not strenuous the gymnastics, walks in the flat, but first of all walks in the fresh air, which both they deliver classes and are the source of

sustaining the health. Prompted sick person - after the long walk will be worn out more and calmer, better will also sleep. [8]

Conclusion

Rehabilitation is joint for all three units since is supposed to serve both for the patient would be like longest efficient and self-sufficient for service mentioned above of everyday functions. In the process what fitter patients will be it in all three disease entities with will constitute the smaller load to the service of persons looking after or the family.

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OSTEOPOROSIS - PREVENTING AND CURING
Osteoporoza - zapobieganie i leczenie

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Abstract

Osteoporosis is increasing problems still in the world. This illness regarding the big part of the population, they think that she touches.

A real prevention lowers the risk of the appearance of osteoporosis. Actually led multidisciplinary the prevention to a considerable degree curbs and delays the appearance of negative symptoms and the deformation. In the prevention of osteoporosis motor streamlining plays the greater role. On account of the fact that osteoporosis gives irreversible changes a prevention is an effective way of the fight against osteoporosis.

The program of the treatment must individually be drawn up based on the clinical, densitometric and radiological test.

A deceleration of the atrophy of the bone tissue is an aim of the prevention through the attempt to eliminate factors which hasten the disappearance for her. Keeping top bone mass is an important aim of the prevention, best so long as it is possible.

Streszczenie

Osteoporoza jest ciągle narastającym problemem na świecie. Choroba ta dotyczy dużej części populacji, uważa się.

Ryzyko wystąpienia osteoporozy zmniejsza właściwa profilaktyka. Właściwie prowadzona wielodyscyplinarna prewencja w znacznym stopniu ogranicza i opóźnia wystąpienie negatywnych objawów i deformacji. Dużą rolę w profilaktyce osteoporozy odgrywa usprawnianie ruchowe. Ze względu na to iż osteoporoza daje nieodwracalne zmiany efektywnym sposobem walki z osteoporozą jest profilaktyka.

Program leczenia musi być indywidualnie opracowany na podstawie analizy klinicznej, densytometrycznej i radiologicznej.

Celem prewencji jest zwolnienie tempa zaniku tkanki kostnej poprzez próbę wyeliminowania czynników, które przyspieszają jej zanik. Ważnym celem profilaktyki jest utrzymanie szczytowej masy kostnej, najlepiej tak długo jak to jest możliwe.

Osteoporosis is increasing problems still in the world. This illness regarding the big part of the population, they think that she touches, over the 25% of women and the 10% of men after 60 of year of age. [1]

As first Volkman described osteoporosis in 1882 and described her as "illness from the non-usage". In 1940 osteoporosis was named by Fuller Albright as illness, in which he is "too little bone in the bone". [1, 11]

It is estimated, that these numbers from the year for the year increase. According to WHO statistics from 30.06.2004 in Poland, by the population of 11 m of 600 thousand persons after 50 years old, it is estimate, that can be touched with osteoporosis about 2,2 mln of women and about 1 mln of men. Because of complications after fractures osteoporotic amongst elderly people annually a 20% of women and a 30% of men die, and the 50% out of this group of sick persons which will survive is disabled. Visualizing the problem of osteoporosis with special taking into account the prevention and treatments are a purpose of work. It is allocated the great honor of the presentation for the role of the physical activity which according to conducted tests, favorably sails out to the prevention as well as has his place in the treatment of osteoporosis. It isn't impossible to talk about osteoporosis as about illness afflicting only a bone structure. Symptoms and the course of this disease have one's unfortunately negative reflection in other structures of our organism. So osteoporosis is an interdisciplinary problem to which we should pay special attention. In our presentation we will try to move this problem closer. [1, 5]

Definition of osteoporosis

WHO defines osteoporosis as the metabolic disease being characterized by a mineral density for her reduced and disorders of microarchitecture which they lead to the increased susceptibility to breakdowns. [2]

Stating lowered bone mass requires additional diagnostics in order to exclude other diseases. Osteoporosis as a result leads the bone and the increased susceptibility to breakdowns for weakening the mechanical strength bones.

In the epidemiological presentation WHO defined osteoporosis in 1994, as BMD (bone mass density) below - 2,5 of standard deviation (SD - standard deviation), towards average BMD for, healthy and adult juveniles of the same sex through the indicator T- score.

Correct value T - score above - 1.0 SD and below +1,0 SD.

Value between – 2,5 SD and – 1.0 SD announce the reduced bone density. [2]

Evaluation criteria of the state of the bone tissue

1. Advanced osteoporosis - BMD below 2.5 SD from the average norm for adults
   SCORE T - smaller from -2.5, presence of fractures
2. Osteoporosis - SCORE T - smaller from -2,5 without the presence of fractures

3. Osteopenia - SCORE T - scope from 1.0 to – 2,5
4. Correct bone mass - SCORE T - bigger from 1,0. [3, 5]

In the today a prevention of osteoporosis which prevents unfavorable results which cause not only sick persons, but also their home environment the problem, as well as the society as a whole is very important.

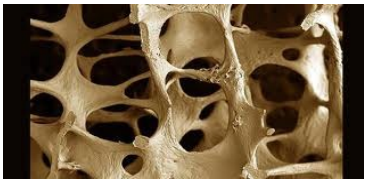

Fig. 1. Wrong structure of the bone tissue in osteoporosis. http://kobietamag.pl/artykul/osteoporoza-podstepna-choroba-ktorej-trzeba-zapobiegac/ [access 05.05.2012].

Osteoporosis for a lot of years remains unnoticeable, since runs painlessly causing depletion of bone mass morover not giving symptoms on the part of the system of the motor organ. Therefore osteoporosis is named quiet and devious 'with illness.

Structure of the bone tissue

The structure of the bone and the cycle of reconstructing them. A bone which is a connective tissue as well as a cartilaginous tissue result in the integrity of the skeleton. It is possible to divide the bone to the cortical, i.e. outside honor or the compact bone and in the trabecular honor. The cortical honor constitutes c 70-80 % of total mass of the skeleton. Osteons constitute the basic building unit of the bone. The cancellous bone constitutes the 20% of the weight of the bone tissue and is built from building individuals. Cancellous bone area of c 10 m 2 and it is c three times bigger than the cortical bone. The bone has optimum mechanical property and minimal mass, since for her the structure is based on the three-dimensional net of the internal scaffolding and on the outside coat which is starchy. [8]

The bone is built of mineral substances, organic compounds, cellphones and water the organic motherland constitutes from 20% of bone mass. [3]

The motherland contains bone corpuscles i.e. osteocytes and proteins are set collagenous. The bone is a living tissue which is liable incessantly to processes of the restoration which run it across at the participation of osteoblasts, bone corpuscles and osteoclasts.

Cycle of regenerating the bone tissue.

Activation - osteoclasts (osteoclasts) bones pulled to determined places in internal surfaces stay. This process is stimulated e.g. by the injury or long-term immobilizing; appears in regular intervals. Resorption - the whole process lasts from 6 up to 12 days, relies on the schedule of small chosen areas of the bone in order to mold holes in them. Reversion - lasts from 7 up to 10 days, the process consists in filling holes incurred up with the so-called cement line by uninucleated reverse cellphones. Link - reverse cellphones emit signals to osteoblasts. Reconstruction - process of reconstructing and possible creating the bone starting from the production of layers of the motherland. Mineralization - accumulating calcium and other minerals in the new bone. [4]

As this way as in every living tissue this way and in bones they occur two most important for of the one woven construction processes and of disintegration. So that the process runs smoothly appropriate amounts of white and minerals are needed. These processes are controlled by types of cellphones. Osteoblasts - (gr. Blastos indicates the embryo) they appear where a build process of the new bone proceeds. In the course of being formed bones gradually transform osteoblasts into osteocytes been called with bone corpuscles which abilities to propagate don't have. The construction process of the bone stays in this moment finished. Osteoclasts - (gr. Clasis means to break) osteoclasts cause destroying and resorptions of bone mass. For this process stoped a thyrocalcitonin influences. [8]

These two types of cellphones cooperate with themselves and cause permanent construction processes and of resorption of the skeleton.

Fig. 2. Structure of the bone tissue. www.jangar.pl / oferta/edukacja-przyrodniczo-ekologiczna-badania-i-monitoring-srodowiska/biologia-czlowieka [access 05.05.2012].

Bone corpuscles - an inspection of the mineralization of the bone and the process is their main task of resorption of the bone tissue.

Osteoporosis

Epidemiology

How it appears from epidemiological data to osteoporosis 75 million persons are sick in the USA, Japan and Europe. As everybody knows from statistical data ,,quiet murderer of the bone" hurts the every third woman in the older century. [7] In Poland an exactly known frequency of appearing isn't. It is estimate, that touched with this illness there are c 25 % women and 13 - 29 % men. Osteoporosis is cause 1,3 mln of fractures annually; including 500 thousand Fractures of the spine, 250 thousand fractures of a thighbone, 240 thousand fractures of the forearm. [7] According to calculations by the substantial amount of elderly people and leading the unhealthy lifestyle and feeding number of cases of fractures of persons with osteoporosis still will increase.

Etiopathogenesis

Osteoporosis is illness being characterized by a total fall in bone mass. It is one of most oftentimes appearing metabolic diseases of the bone, in comparing the population of the equal-age group, at sick persons to osteoporosis the skeleton contained the paucity mineralized of bone tissue. For osteoporosis an absent-mindedness of processes is osteoblast and osteoclast characteristic. A connection of illness with the menopause is characteristic. Tests show, that after 40 women as well as men lose the year of age bone tissue with the speed 0.3 % annually, however at men this speed of loss of the bone tissue continues,, and at women after the menopause increases 10 time all the way to 35 for the year. [8]

Classification

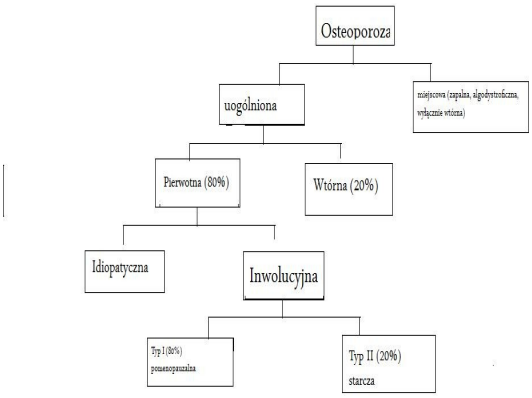

Fig. 3. Classification of osteoporosis. [3]

Classification (criterion of the location)

Local osteoporosis - usually runs along with inflammatory processes. The reach will depend on the underlying disease and intensity generalized osteoporosis - regarding the entire skeleton, acts as the result of systemic metabolic disorders.

Clinical criterion of identity (etiologic criteria)

Primaeval osteoporosis - the cause of this illness until the end isn't found. Lowering bone mass below a standard stamps it, which the cause is unknown for. An old age is the greatest risk factors. Changes which they steal in the bone tissue are one and with main symptom of pathological changes in the bone tissue and disorders of the homeostasis of calcium.

Recurring osteoporosis - this kind of osteoporosis is a consequence of different diseases among others of rheumatoid diseases, cancers, hyperthyroidism, parathyroid glands, diabetes of the type and, of gastrointestinal disease, kidneys, immobilizing, the long-term use of medicines e.g. heparins, anticonvulsant.

Involutional osteoporosis - this figure of osteoporosis acts most oftentimes as senile and postmenopausal osteoporosis. [5]

Risk factors [1]

Many factors which they can take to the increased susceptibility to osteoporosis exist.

Risk factor	Grounds
Advanced century	In the fourth decade of the life physiological loss of the bone tissue takes place
Genetic - women - the white race - family History of osteoporosis	Women in the large degree than men are exposed to osteoporosis. It is caused with smaller top bone mass and her loss after the menopause
Anthropometric - short height - small body weight - frail build	
Hormone - premature spontaneous menopause - premature induced surgically menopause	Oestrogens which are an inhibitor play an important role resorptions of the bone tissue
Dietetic - low supply of calcium in the diet - poor diet into the vitamin D - the excessive consumption salts - acid-ash diet - undernourishment	Insufficient absorbing calcium causes a low concentration of the vitamin D in the alimentary canal what can lead to the appearance of recurring hyperthyroidism and of suppressing processes of creating the bone tissue.
Lifestyle - low activity motor - exaggerated eating the coffee - exaggerated eating alcohol - little exposition to the sun - long-term immobilizing	Thanks to the physical activity cytokines cause the process of stimulating creating the bone tissue. In the course of effort powers grinding down and tensing which have a positive effect on bones work on bones. Long-term immobilizing makes axial burdening the skeleton impossible
Medicines reducing the metabolism of the bone tissue - glucocorticosteroids - heparin in excess - preparations of the thyroid gland - tetracyclines - anticonvulsant medicines	These medicines demonstrate the negative influence on the activity of individuals of the bone reconstruction - hinder the process bonemade and simultaneously stimulate resorptions
Illnesses - endocrinological (hyperthyroidism, of parathyroid glands, - gastroenterologic (of disturbing the intestinal absorption) - nephrologic (dysfunction of kidneys, dialysis) - of the bone and the bone marrow	

Clinical symptoms

Osteoporosis unfolds secretly and at first gives no perception of pain. The first symptoms a sick person reports which are chronic pains of the back which intensify while standing and a sitting position cause discomfort. These complaints usually yield by rest. At spinal symptoms often located pains in the abdominal cavity determined as spilt can accompany, dyspeptic symptoms and sometimes problems also appear with emptying.

We can also rank among other organic symptoms:

- of disturbing the digestive function; loss of the apatite, constipations, flatulences
- frequent infections broncho - pulmonary

Just enough of progress of osteoporosis are noticeable:

- intensifying backaches, not-yielding in the recumbency
- deepening the pectoral kyphosis and a sharp pain of the pectoral and lumbar stretch of the spine
- pains of the cervical installment and deepening the cervical lordosis
- overloading ligaments and muscles
- limiting the mobility of the spine. [1]

Physical signs:

- lowering the head ahead
- disturbing the conduct of the body
- compression fractures of vertebras and pain accompanying it
- deepening the pectoral kyphosis (so-called widow hump) - weakening the glutei and the belly with his bulge
- limiting active movements of the spine
- the restriction or the lack of the mobility of the chest
- fir-tree arranging plicas thoraco-lumbar
- increased muscle tension paravertebral. [1]

Kinds of fractures osteoporotic:

- double concave fractures of hard cores (piscine vertebras) - reaches them most oftentimes in the lumbar spine are caused invagination oneself of intervertebral shield to trunk. [1]
- wedge-shaped fractures - they come into existence during the flexural mechanism, most oftentimes act in the pectoral installment and thoraco-lumbar. Sometimes he can reach to the pressure of the highlighted fragment of the hard core on the spinal cord.
- flat vertebra - he comes into existence if reaches for total crushing the spinal hard core.
- of breaking the base of more distant forearm bones
- of the fracture closer to the tip of a thighbone. [5]

Periods of osteoporosis

The I period - early Osteoporosis – Osteopenia

The sick person feels multilocale pains near the spine and within upper limbs and bottom. In the time at the sick person it is possible to observe appearing of pain lowering the mood and sometimes even depressions. During the test it is possible to state: the attitude of the body remains disturbed, muscles are paravertebral in the greater tension, active movements of the spine are full-scale, but painful. Inspecting the X-ray generator doesn't demonstrate changes, however the tomodensitometry states the osteopenia.

The II period - advanced Osteoporosis

The sick person complains about pains of the spine which increase during moves. While examining at the sick person we notice: - increasing the cervical and lumbar lordosis as well as the pectoral kyphosis, lowering rib arches and relaxing the lining of the stomach, fir the ones arranging skin pleats on the back. Radiological examining the pectoral installment shows reduced savour out of hard cores of vertebras, and sometimes lowering the height of spinal hard cores. The tomodensitometry shows osteoporosis.

The III period - late Osteoporosis

The patient reports constant backaches which increase during moves. To observe it is possible the change of the posture of the body and reducing the growth. The patient has difficulty with establishing contact with people. Fractures stayed in the medical history of upper limbs or bottom. Figure of the sick person: strengthened kyphosis in the pectoral installment, the correction for her causes an intense pain; lowering the head ahead along with the observed increased cervical lordosis; lowering rib arches; weakness muscles of belly, gluteal, of upper limbs and bottom; The patient oftentimes stands on lower limbs bent in knee joints and hip. [3, 5]

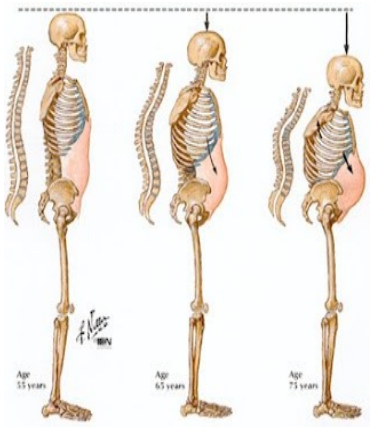

Fig. 4. Figure of persons in individual periods of osteoporosis http://zdroweinspiracje.blogspot.com/2010/11/osteoporoza.html [access 05.05.2012].

Diagnostics

1. X-ray test

Changes of the shape, a thinning of cortical layer, a rarefaction depict structures and the changed image of bone beams. It is lets for detecting the fracture. He shows only about 30-40 % of loss of bone mass. [1, 9]

2. Clinical densitometry

This test determines the bone mineral density, as well as the risk assessment of fractures. This test takes place in two places: in part lumbar in area L1 - for L4 and a base closer to a thighbone. They recommend applying this method in both these places.

3. Automatic morphometry of the spine (VFA)

This method was based on DXA method.

4. Clinical pathology

It is lets exclude the cause of recurring osteoporosis and identify coexisting clinical problems. In diagnostics they should be marked: level of calcium in blood and urine, level of phosphates and the alkaline phosphatase, level of TSH, free thyroid hormones and oestrogens. [1, 3, 9]

Prevention

In order to minimize the risk of the appearance of osteoporosis and are recommended to further progress:

- appropriate supply of calcium in the diet - the daily consumption for adults of calcium is 1000 mg, in the postmenopausal period, for women this 1500 mg is., this dose also embraces persons in the advanced century. As regards the reaching young stock a dose of 1200 mg is applied. Also applying the appropriate expenses rich in the protein source is good. To include in the diet also belongs appropriate amount of the milk in different his forms and his preserves. If the sick person to osteoporosis doesn't tolerate the milk for different reasons one should supplement his diet into calcium giving oral preparations containing salts of calcium.
- physical activity - the sufficiency of the move constitutes the basis of the prevention of osteoporosis. The physical activity conditions getting and keeping appropriate top bone mass. The

movement is important, since helps build calcium in into bones, processes of the resorption and reconstructions of the bone recover their mental balance. Moreover well-developed muscles ensure the stability of the skeleton, muscles relieve the spine, the sick person recovers the physical fitness what the smaller risk of the fall carries. Exercises should this way be put together so that they start many muscle groups. During effort strained mechanically bones increase the process bonemade. The physical activity influences the process of the reconstruction of the bone, causes the increase in bone mass as well as stimulates the secretion of hormones calciotropic of growth hormone. [9] One should remember that we should start the prevention of osteoporosis already in the childhood. What amount of our bone tissue will be built to the end of the fourth decade of our life outweighs. The continuous move stimulates osteoblasts in bones which are responsible for building the bone new tissue.

- supply of the vitamin D - appropriately the selected dose of this vitamin reduces loss of the bone density effectively. The preventive dose amounts 400-800 jm. a day. The supply of the vitamin D is important for elderly people which don't go out. In order to convert provitamin into vitamin it will be sufficient to spend in the fresh air 10 for 20 faces per day, even in somber days.
- oestrogen therapy - in the postmenopausal period one should supplement the everyday diet with substitutes with applying oestrogens. When contraindications against therapy appear estrogen a thyrocalcitonin or biophosphates are applicable.
- reducing drinking alcohol, caffeines and giving the burning up - exaggerated eating alcohol increases the phenomenon appearing of osteoporosis both at men and at women. In this way a risk of the femoral neck fracture grows. The ethyl alcohol disadvantages in the body transformation of the vitamin D what in consequence results in reducing absorbing calcium from intestines and him exaggerated expelling with urine. Also smoking cigarettes is unfavorable since intoxicants included in them work directly on osteoblasts. [6, 7]

Physiotherapy in the prevention of osteoporosis

Purpose which stays put it is above all a prevention. It is aimed: enduring pain, keeping the good posture of the body, reconstructing normal muscle power, keeping the correct scope of movements, increasing the everyday motor activity. [9]

Treatment

The I period - early osteoporosis

Treatment with painkillers, nonsteroidal anti-inflammatory medicines

Kinesiotherapy:

- exercises regulating the muscle tension - of training in lightening
- learning of the good posture - exercises antykiphotic

Therapy of group classes is also indicated e.g. in the bedpan, as well as appropriately selected individual exercises.

Long walks are recommended about 30 min. per day

Physiotherapy:

- electricities diadynamic
- anode electrotherapy
- magnetic field
- TENS
- cryotherapy (if not has contraindications)

The II period - early osteoporosis

In order to cure in this period preventing further deformations, as well as reducing is of pain complaints. The sick person performs isometric exercises of muscles of the torso, works above the good posture of the body, exercises correcting the kyphosis incurred, general-keep-fit exercises improving the fitness of muscles. Practicing exercises are performed individually or in the group. A duration is a minimum of 20 minutes per day.

Also applies:

- electrotherapy
- magnetic field
- TENS
- heat treatment
- massages of muscles - manual, underwater, aquawibron

There is absolutely an orthopedic supply sometimes in the form of bullets, walking frames, walking sticks effectively limbs lighten which burden, as well as prevent falls. Neck supports prevent vertigo and reduce pains from overloading muscles.

The III period - advanced osteoporosis (late)

The rehabilitation in this period very much is limited on account of existing deformations. The rehabilitation in this period includes:

- respiratory exercises
- loosening exercises
- isometric exercises of upper limbs and bottom

Torso applying the orthopedic supply as the next fulcrum for the safe migration of the sick person is necessary.

Everyday walks are recommended c hours. Physiotherapy is applicable with the great restriction. To particularly painful places an electrotherapy, a magnetic field or a heat treatment are applicable. [2, 7, 10, 11]

Treatment

It isn't possible to heal primaeval osteoporosis, but effectively conducted therapy can brake or temporarily slow the unfavorable course down.

Drug treatment - balancing processes is setting her of the resorption and the reconstruction of the bone, as well as amending balance of calcium in bones. In the treatment applies:

- Oestrogens
- Medicines antyresorptic
- Osteogenic medicines (vitamin D, sodium fluoride)

In this form of the treatment effects are noticeable, although one should remember that pharmacology mitigates symptoms of illness and the unknown doesn't remove causes which are.

- Oestrogen therapy - oestrogens prevent osteoporosis, and if already reached her they lower the risk of fractures and also for the task illnesses have hindering the process.
- Fluorine compound and of calcium - calcium provides with building materials for creating bone substance. Delivered fluorine with calcium causes that bones are more immune to the negative effect of osteoclasts.
- Vitamin D - additional therapy. She is particularly important, since is needed for absorbing calcium from intestines and for building in it into bones. Appropriate wholesome expenses and the sufficient time of spending a lot of time out of doors will satisfy the daily demand for this vitamin.
- Analgesics - a fight against pain is one of main purposes of therapy. Pain is also sometimes a positive symptom in initial phases of osteoporosis. After diagnosing illness painkillers relieve negative feelings and help conduct therapy. [2, 3, 10, 11]

Treatment - physical therapy and the move

Physiotherapy and pharmacological treatment mutually complement each other. Regular exercises help in the fight against pain, chattels do the improvement good in joints and contribute to the increase in bone mass. Persons burdened with osteoporosis should remember that alone we should not draw the therapy program up.

Streamlining treatment

The regular movement supports building in calcium into the bone tissue. Additionally during the move they are stimulated important in the build process of the new tissue osteoblasts. Baumgarten gives, we can expect effects of exercises after c 6 months of exercises, however this period isn't specified. Some tests give, that increase in bone mass about 2 - 5 % turns up at time 3 - of 4 years of systematic exercises. One should however remember about depletion of bone mass at not practicing persons which takes out into the 6% annually. The motor rehabilitation helps to stop this process and contributes to the increase in bone mass. [10, 11]

Preventing further loss of bone mass is an Aim of the rehabilitation, preventing falls as well as reducing pain complaints.

The training should be individual for every patient. As a rule he consists of passive and practicing exercises. Passive exercises are applied with patients with great restrictions and have starting the patient for the task. Next for the patient practicing exercises which appropriately are fitted are selected to the condition and a patient's condition. Additionally every sick person under makes windows of the psychotherapist exercises which later alone he will carry out at home. One should remember that in therapy a regularity counts. One should also remember that performing exercises cannot cause pain, for if will appear we should stop the exercise and notify the doctor of it. It is worthwhile supplementing the gymnastics with sport. Well if for recreations we can donate c 30 mines per day 3 up to 4 times every week. In the prevention it should direct itself attention to avoiding burdens, of improper moves which are disadvantageous to the spine.

- Applying the warmth and waters

These methods have a combating for the task, relieving pain. Warmth and water stimulate the blood supply and the local metabolism what in consequence building in causes oneself of calcium in the bone. Warmly a painful tension has the task relaxing muscles and liquidating them. Water therapy according to Kneipp water finds the big application in the treatment of osteoporosis. Warm water relieves the pain, corrects the metabolism and the regeneration process of tissues.

Recommended treatments with the use of water:

- pouring the back with water and their compresses
- pouring aching places with water

- partial and total baths

Local applying the warmth:

- therapeutic mud
- facer

Ingredients included in them favorably have an influence on a metabolism, tissue regeneration by partial getting oneself of nutritients and mineral through the skin.

- hot compresses of mineral volcanic mud - in order to loosen and to warm muscles bodies are applied in determined parties

- Magnetic therapy

she is applied simultaneously with thermal therapy. The magnetic field positively works on cellphones and nerves, corrects the regeneration of the bone into this way and relaxes muscles.

- Percutaneous stimulation of nerves

It is one of methods of relieving pain. In general well she is tolerated by patients.

- Massage

In therapy oftentimes massage combines with the kinesiotherapy. Massage is performed ahead of the gymnast and a preparation, heating up and avoiding the disturbance of pain during exercises have the task. Leveling the perception of pain originating in the spine is setting the massage therapist. Massage of the periosteum implemented by Voglera in 19288 year, technician of this massage contributes to faster regeneration process and strengthening the bone.

- Orthopedic supply

Nothing will replace our muscle corselette. Muscles which are trained and strong take over the part of his supporting functions from the skeleton. In therapy at this target correct needling is valid for osteoporoses muscles of back. [2, 3, 10]

Assistance in relieving the spine:

a) Corselettes and stretchy bands - they constitute passive lightening and don't affect an increase in muscle mass. Applying them can contribute to gradual disappearing muscles of back. Corselettes are only applicable when muscles are weakened and cannot fulfill functions of an owl. It is important so that the patient while wearing the corselette doesn't forget like this for gymnastics important for strengthening muscles.
b) Jevetta corselette - is worn by the patient through c 4 - 6 weeks. He is applied after breaking vertebras in the acute and chronic period illnesses. A protection of the spine against sudden moves of bending the torso is his basic function, combats the deepening kyphosis, relieves

pain. In the time the patient should perform wearing the corselette isometric exercises of muscles of the torso and buttocks.

c) Plaster casts - are established in case of the rupture of vertebras, or there is such threat. The not treated fracture of the spine can cause spinal cord injuries well a paralysis is connected with it. Carrying a plaster cast doesn't limit the patient physically.

d) Assistance for walking - walking frames, bullets, woods
They help sick persons hold the balance, help make problems in moving. [9, 10]

Education in a well-balanced diet

The treatment of osteoporosis doesn't require the special diet, however appropriate the trophism will matter greatly. The diet in osteoporosis requires proper eating habits from the patient of the enforcement, and isn't only a momentary form of escape from regular feeding. Relevant expenses must ensure the appropriate amount of elements which are needed for correct construction for the bone. Unfortunately each of us eats the market lot of phosphorus what results in upsetting the balance between proportion of calcium and phosphorus. New eating habits which we lead into expenses are an abundance of lettuce, fruits, the cereal crop and potatoes. Because they deliver a lot enough to the energy and will satisfy the demand for such important proteins. One should remember, that every he must appropriately be added variety, only then we will provide the organism with all needed nutritients. In the diet of persons with osteoporosis we pay attention for sufficient eating the milk and his preserves which are essential to build of bone substance. The sick person should pay attention to what he drinks. The mineral waters rich in calcium, natural fruit juices, milk drinks are recommended. One should limit frequent eating alcohol which adversely affects the bone tissue. [4]

Conclusions

A real prevention lowers the risk of the appearance of osteoporosis. Actually led multidisciplinary the prevention to a considerable degree curbs and delays the appearance of negative symptoms and the deformation. In the prevention of osteoporosis motor streamlining plays the greater role. On account of the fact that osteoporosis gives irreversible changes a prevention is an effective way of the fight against osteoporosis.

The program of the treatment must individually be drawn up based on the clinical, densitometric and radiological test.

A deceleration of the atrophy of the bone tissue is an aim of the prevention through the attempt to eliminate factors which hasten the disappearance for her. Keeping top bone mass is an important aim of the prevention, best so long as it is possible

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KYNOTHERAPY AS THE METHOD ASSISTING THE REHABILITATION OF CHILDREN WITH AUTISM
Kynoterapia, jako metoda wspomagająca rehabilitację dzieci z autyzmem

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Keywords: kynotherapy, autism, dog psychotherapist.
Słowa kluczowe: kynoterapia, autyzm, pies terapeuta.

Abstract

Kynotherapy is a domain thriving for many years having a more and more big application in assisting rehabilitation treating suffering children for autism. Kynotherapeutic classes consist in stimulating the development of the child through the contact with the specially selected, but next trained dog with psychotherapist. Individually exercises selected according to needs of the patient can much lengthen the odds on the smooth running in the adult life supporting the psychosocial development of the child working with the dog also. On the basis of observations of dynamics of the progression kynotherapy in final years it is possible to expect the growing popularity of this method on account of current satisfying results, of drawing up new sets of exercises and coming into existence of next organizations focusing specialists in this field.

Streszczenie

Kynoterapia jest prężnie rozwijającą się od wielu lat dziedziną mającą coraz większe zastosowanie we wspomaganiu leczenia rehabilitacyjnego dzieci cierpiących na autyzm. Zajęcia kynoterapeutyczne polegają na stymulowaniu rozwoju dziecka poprzez kontakt ze specjalnie wyselekcjonowanym, a następnie wyszkolonym psem terapeutą. Indywidualnie dobrane według potrzeb pacjenta ćwiczenia mogą znacznie zwiększyć szanse na lepsze funkcjonowanie w dorosłym życiu wspomagając również rozwój psychospołeczny dziecka pracującego z psem. Na podstawie obserwacji dynamiki postępu kynoterapii w ostatnich latach można się spodziewać rosnącej popularności tej metody ze względu na dotychczasowe zadowalające wyniki, opracowania nowych zestawów ćwiczeniowych oraz powstawania kolejnych organizacji skupiających specjalistów w tej dziedzinie.

Kynotherapy is an issue relatively extensive grasping diverse methods of the rehabilitation. Courses of treatment closely are connected with the kind of disease, in this case with the disorders associated with autism. In every type of therapy a trained dog led by the specialist performs the key role.

Word Kynotherapy derives from the Greek word “kyon” (dog) and therapy combines with the word. Kynotherapy is a multistage process, where overcoming fear and rehabilitated accepting the company of the dog by the child are a crucial moment. They state that children touched with autism more easily establish the bond with the dog with psychotherapist than with the second man. Presence of the dog certainly relaxes and motivates the child to the follow-up work developing his psychosocial abilities. [2]

History kynotherapy in Poland in 1966 in the form spontaneous meetings of enthusiasts of dogs with disabled persons are started. Along with growing interest in this domain a Warsaw foundation was formed CZE-NE-KA, which harness sport was a primary activity for. With the participation of dogs a Foundation is the first organization, for which organizing therapy was a purpose Friend established in 2002 in Warsaw. At the same time for the Foundation Friend a Dogtor Foundation was formed. In 2003 in Łódź a foundation was formed "Ama Canem" which takes care of persons suffering from diverse diseases. In 2004 in Bydgoszcz a Dogotherapeutic Foundation was formed "exactly this way" which already from the beginning of one's activity distinguished methods one-two-three, AAE and AAT. Within consecutive years many new foundations dealing with therapy with the participation were formed of dogs. The problem constitutes the fact that organizations operate according to own standards, because there are no all-Polish concerning regulations kynotherapy. In the country many amateur centers function kynotherapeutic - are often these are people well educated, having good qualifications, however there are many offering swindlers still "pseudokynoterapię" [3].

The following genera are distinguished kynotherapy:

1. One-two-three (Animal Assistant Activity) - of taking the phylum hold one-two-three they are characterized by a lack of script and methodology, here a spontaneity of conducted meetings is crucial; one-two-three a stage constitutes cognitions, of releasing positive emotions; the child establishes the bond with the dog with psychotherapist through a direct contact among others a touch is which; one-two-three constitutes the form of the group work,
2. AAE (Animal Assistant Education) - classes of the AAE phylum are aimed at streamlining the intellectual development of the child; AAE constitutes the form of the individual work / group,
3. AAT (Animal Assistant Therapy) - classes of the AAT phylum depend on individual needs of the child; this genus kynotherapy requires the supervision of specialists along with the increased level of difficulty of exercises - progress is written in files; AAT constitutes the form of the individual work [3].

It is worthwhile recalling that mentioned above genera kynotherapy refer to refined standards. Polish organizations took the following division of activity on: Meeting with the Dog (SP),

Education with the Dog (EP) and Therapy with the Dog (TP). Refined and Polish standards differ slightly from themselves methodologically but the sense of the operation is the same. Distinguished genera kynotherapy attendances require the dog, however choice of the dog being suitable for a psychotherapist is very much difficult and laborious on account of the abundance of spot heights which a dog participating in classes should have kynotherapeutic. The process of selection should be based on an extensive knowledge, for experience and above all awarenesses of allocating the given race.

The Polish Kynotherapeutic Company recommends to psychotherapists pure-bred dogs to be chosen on account of their stabilized genetically nature well is connected with it - predictability. When choosing the dog he is a next stage positive completion of training, after which the dog should represent the judicious obedience. Beasts working as the psychotherapist should be also social. Opinions that the given dog is willing to work can often heard and of contacts with children, however one should remember that not every family dog is suitable for a psychotherapist. The dog accepts the man without the account of it which is, not paying heed to his defects - loves unconditionally. What's more, the trustful and gentle dog doesn't instruct, there is a penalty, patiently everyone watches the gesture and the movement of the child. With functional groups of dogs which completely don't send at targets themselves kynothrapeutic there are battle dogs (e.g. Canario Great Dane), guard dogs (e.g. Tosa Inu) and guard dogs (Alsatian) [1]. Next contraindications for conducting operations kynotherapeutic certainly wounds of all kinds are opened, spending infections running in the general weakness along with fever, panic attack before dogs (phobia), allergy to the canine hair and unchecked aggression towards dogs.

Classifying patients oneself for the application kynotherapy these are very often children suffering from Down's syndrome or autism. It is worthwhile concentrating on sick persons to autism since it is illness relatively poorly known on account of the set of manifestations often assigned to specific individual children.

Autism is a failure to thrive, having character of the comprehensive property with many manifestations - are most often it is a slurred speech, of move, often but not always special abilities in the chosen domain. He is perceived as the kind of disability which is combined with the type of the social exclusion, which negatively influence the development of the child. There are many methods assisting curing autism, among others Kynotherapy. Kynotherapy in case of autistic children much lengthens the odds on the smooth running in the adult life, establishing the bond with other people facilitates. Atmosphere of the play and relaxations accompany classes of this type what it is possible with the child to conduct more exercises of different type e.g. thanks to speech-therapy exercises, sensoric [4].

According to Maria Pecyna it is possible to single out three categories of properties of the childhood autism:

a. Quality disorders of social relations being manifested through at least two manifestations:
   - considerable behavioural disorder oneself displaying the child oneself in contacts bezsłownych (non-verbal), so as: eye contact, expression of the face, attitude of the body, gesticulations;
   - peer light switches are missing;
   - not-educating the need of seeking the chance for sharing joy, interests or achievements with other people;
   - lack of the social or emotional reciprocity (exchanges).
b. Quality disorders of the communication of contacts with other people being manifested through at least one of the following manifestations:
   - delayed or uneducated speech;
   - stereotypically repeated expressions (echolalias);
   - lack of the diversified, spontaneous linguistic exhibition competent for the given level of development.
c. Limited and stereotyped patterns of the behaviour being manifested through at least one of the following manifestations:
   - repeating one or of a few stereotyped and limited models of interests which both subjectively, and like an object diverge from the adopted norm for the given developmental age;
   - stiff attachment to peculiar, impractical customs or rituals in the behaviour;
   - stereotyped repeated motor mannerisms, as e.g. fluttering with hands or fingers, spinning around in circles, as well as moves of the whole body;
   - persistent filling oneself with objects, e.g. with only toys, with omitting people [5].

Planned therapy kynotherapeutic he reduces appearing of the disorders associated with autism, however on account of the diversity of manifestations is very heavy for planning. Well the selected rehabilitation program is aimed at a personal touch to every patient and his area of disorders. Therapy is conducted in a direct contact of the child and the dog what is formed thanks to of baulk with them carry emotional which beats the important aspect in therapy. Thanks to combining exercises and games ago the psychotherapist can enforce more and more positive behaviours. [2]

Model exercises with the participation of the dog, developing functions perceptual and working on the individual negotiations:

a. Eyesight

This exercise is aimed at working encouragingly on the optical arrangement. The child observes what happens around him what the optical arrangement is stimulated by. The dog takes an active part in exercises. Thanks to that the child willingly keeps eye contact with him and closely observes him. Of fun with the corner assistance so like e.g. balls, cubes, basins. Are also with important aspect in therapy since the patient is able to take own choices of the ranking and to notice specific objects and them appropriate, of colours, colours and shapes. What works very much the positive to the optical arrangement. [2]

1. Exercise: holding and throwing a colour ball to the dog. [6]

2. Exercise: the child arranges titbits of the dog to cups with system cube of the green colour to the green basin, yellow cube to the yellow cup. [6]

b. Speech

Encouraging the child to the conversation is giving this therapy, be if the child isn't ready of complicated exercises. Classes consist in preparing it for the speech by teaching and forming the correct university class education correct operation of articulators which the hedgehog, the palate and the mandible access composition into. [2]

4. Exercise: (articulators) the Psychotherapist gives small amount of the processed cheese for child to both hands, the child gives one hand for licking for dog and on second will imitate keeping the dog. [6]

4. Exercise: (speech) the child loud names and compare body parts of the dog. [6]

c. Hearing

The child learns to identify sounds of the corner kick of coming about other parameters and tones moreover if the dog participates we can lead into the play imitation and repeating individual

sounds so that the child studies through the contact with the animal. A calming and relaxation operation can have theses if we let go for the child of the fairy tale or quiet calm sounds. [2]

5. Exercise: the Child listens intently to the heartbeat of the dog. [6]

d. Coordination aurally- motor

By the common movement with the dog, the child learns a sense of rhythm as well as him moves stay oneself more precise and coherent, in addition for exercise it is possible very well to connect fun with the move and listening. [2]

6. Exercise: the psychotherapist lets go of the song, the child performs tasks this way how in the song e.g. pass the foot. [6]

e. Motor functions Sa with very essential aspect in the life of the child, let the normal development and emotional as well as motor. He gives the child rapidly moments for destressing by the form the play, and there is planned therapy being aimed at developing motor, social and cognitive elements actually. Well to run such parties in the system what the patient learns how to behave by other children thanks to. [2]

7. Exercises: watching the own silhouette and the silhouette of the dog in the mirror. [6]

8. Exercises: the dog passes the baulk child. Children applause and sing into the rhythm of the music. [2, 6]

And. motor activity big purpose:

- exercises of May on the destination poprawe kordynacji of moves
- poprawe umiejetnosci and dokladnosci in the performance ruchow
- sense of well-being dzieki for improvement sprawnosci
- cognition wlasnego ciala [2]

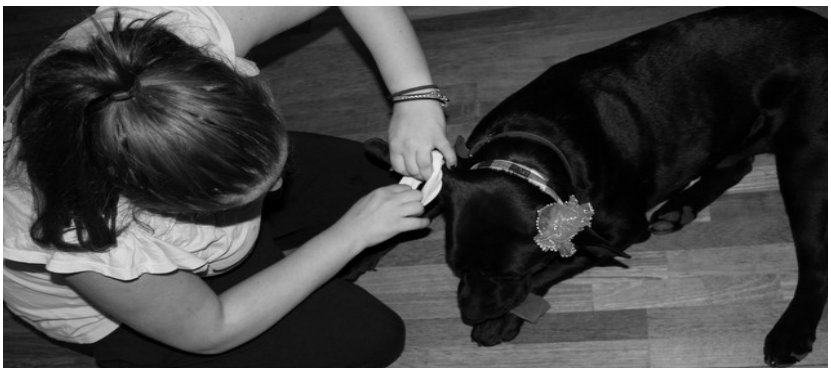
9. Exercises: the dog stands, child probuje przejsc rotten, not dotykajac of it. [6]

b. low motor activity

purpose:

- improving the thorough grip
- shaping prioproreception
- more thorough and more close-knit grip both crayfish [2]

10. Exercises: a hairdressing salon puts the child male elements to the dog e.g. hairpins, rubbers. [6]



Conclusions

Kynotherapy is a multistage process, where overcoming fear and rehabilitated accepting the company of the dog by the child are a crucial moment. They state that children touched with autism more easily establish the bond with the dog with psychotherapist than with the second man. Animals carefully are selected to the rehabilitation. The process of selection should be based on an extensive knowledge, for experience and above all awarenesses of allocating the given race. The Polish Kynothrapeutic Company recommends to psychotherapists pure-bred dogs to be chosen on account of their stabilized genetically nature well is connected with it - predictability. Kynotherapy is dynamically developing domain of rehabilitation proceedings at patients with neurological diseases of different kind. Current news reports in literature treat about a positive effect of the dog

on the behaviour and therapeutic progress at persons with diseases of different kind. A wider research on the influence is needed kynotherapy to the body of the man.

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RESTORING THE FUNCTION OF THE CINEMATIC COMPLEX OF THE KNEE JOINT IN PATIENTS AFTER RECONSTRUCTION OF THE ANTERIOR CRUCIATE LIGAMENT

Przywrócenie funkcji kompleksu kinematycznego stawu kolanowego u pacjentów po rekonstrukcji więzadła krzyżowego przedniego

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Keywords: anterior cruciate ligament, ALC, reconstruction, knee joint.
Słowa kluczowe: więzadło krzyżowe przednie, WKP, rekonstrukcja, staw kolanowy.

Abstract

This study was undertaken because of the growing number of injuries of anterior cruciate ligament (ACL). They concern a large part of the active young, professionally active people and are a major problem not only medical but also social, because of prolonged time off work or go to retire early. Finding a new, versatile tools for objective assessment of functional status of patients, will allow to refine rehabilitation program so that the person affected by damage to the ACL returned as soon as possible to perform professional, sporting and social.

Objectives

The main aim is to assess the function of the knee with muscle strength, proprioception control in patients performed one year after ACL reconstruction and to evaluate the usefulness of the proposed research: First Control study of visual - proprioceptive in patients after anterior cruciate ligament reconstruction of the static tests. Second Isokinetic evaluation of flexors and extensors of the knee in patients after anterior cruciate ligament reconstruction. Third Subjective assessment of knee function after ACL reconstruction.

Materials and methods

In a study including 100 people attended, half of the patients after ACL reconstruction, the rest are healthy volunteers, belonging to the control group. The study group consisted of 50 patients who underwent anterior cruciate ligament reconstruction in the Department of Orthopedics and Traumatology Hospital. J. Biziel. The research was conducted in 12 months after surgery and subsequent rehabilitation. The study group was 11 women and 39 men, the proportion of male to female Quantitative was 4:1. The average age at testing was 31,16 years. The oldest person studied was 54 years, the youngest 18 years. In studies, patients took part in the Department of Orthopedics and Traumatology Hospital. J. Biziel in Bydgoszcz after arthroscopic anterior cruciate ligament reconstruction. The research includes: patient information sheet, medical history, range of motion, circuits thighs, anterior drawer test, the charging of the lower limbs on the platform made equivalent MTD Control of muscle strength in the chair tensometric MTD Control, fitness tests (test run 40 m, the test stops, test run on a curve, hop test and step test), as well as subjective assessment of treatment results according to the scales: Lysholm-Gillquist, IKDC, and SWLS. However, in this study were used to solve some of the parameters of the issues raised. The control group consisted of 50 healthy volunteers. In the control group were 22 women and 28 men, the

proportion of male to female quantification was 2:1. The average age of volunteers in the control group at the time of the study was 31,90 years. The oldest study participant was 62 years old, the youngest 20 years. Strain gauge test platform MTD Control. The test load of the lower limbs in a standing position the platform load cells used MTD MTD Control System from Physio-Feedback software for Windows. This allows the judge to charge the lower limbs and the stability of the knee. Patients were subjected to a static four trials, two were performed with eyes open and two with eyes closed, on the platform MTD Control. The patient in this part of the study was free 4 x 40 seconds, with five minute breaks. Comparison of results obtained by the research group and the control of various subjective tests: IKDC, Lysholm-Gillquist and SWLS.

Results

For comparison, the research group of the operated leg, with his legs once right and once left the control group test was used Mann-Whitney test. Statistically significant differences between the two groups. The differences usually occurred in the study of muscle strength in the chair load cell, where the legs of volunteers showed a significant greater muscle strength measured for the extensor muscles in the two angles 30° and 60° in the open and closed chain and for the flexor muscles at angle of 60°, in the open and closed chain. Contrast, Strain gauge measurements on the platform did not show significant statistical differences.

This indicates that the control group fared significantly better than the group studied. To assess the progress of rehabilitation of patients and the efficacy of knee injury, it is useful to compile test results of people with the measurement results obtained in healthy individuals, which constitute the norm. Force measurements also allow determination of the ratio of muscle strength between the limbs as well as between opposing muscle groups such as agonist and antagonist.

Conclusions

On the basis of own research work the following conclusions:

First. Application Control MTD Strain gauge platform with the software to determine the symmetry pointer increases objectivity in determining the functional status of the patient and the congruity of the joint after ACL reconstruction.

Second. Rebuilding flexors and extensors is an important element in ensuring the proper function of the knee.

Third. Scales IKDC, Lysholm-Gillquist and SWLS is valuable as a subjective assessment, but showed no correlation with the results of objective tests.

Streszczenie

Badania podjęto ze względu na stale rosnącą liczbę urazów więzadła krzyżowego przedniego (ACL). Dotyczą one sporej części aktywnych młodych, czynnych zawodowo ludzi i stanowią istotny problem nie tylko medyczny, ale także społeczny, z powodu długotrwałych zwolnień z pracy, czy też przedwczesnych przejść na rentę. Znalezienie nowych, uniwersalnych instrumentów do obiektywnej oceny stanu funkcjonalnego pacjentów, pozwoli na dopracowanie programu usprawniania tak, aby osoba dotknięta uszkodzeniem ACL wróciła jak najszybciej do czynności zawodowej, sportowej i społecznej.

Cele

Głównym celem pracy jest ocena funkcji stawu kolanowego za pomocą siły mięśniowej, kontroli propriocepcji u pacjentów w rok po wykonanej rekonstrukcji więzadła krzyżowego przedniego oraz ocenienie przydatności zaproponowanych badań:

1. Badanie kontroli wzrokowo – proprioceptywnej u chorych po rekonstrukcji więzadła krzyżowego przedniego testami statycznymi.
2. Ocena izokinetyczna prostowników i zginaczy stawu kolanowego u pacjentów po rekonstrukcji więzadła krzyżowego przedniego.
3. Subiektywna ocena funkcji stawu kolanowego po rekonstrukcji więzadła krzyżowego przedniego.

Materiał i metody

W badaniach łącznie wzięło udział 100 osób, z czego połowa to pacjenci po rekonstrukcji więzadła krzyżowego przedniego, pozostali to zdrowi ochotnicy, należący do grupy kontrolnej. W grupie badawczej było 50 pacjentów, u których wykonano rekonstrukcje więzadła krzyżowego przedniego na Oddziale Ortopedii i Traumatologii Szpitala im. dr J. Biziela w Bydgoszczy. Badania były przeprowadzone w 12 miesięcy po zabiegu operacyjnym i następującej po nim rehabilitacji. W grupie badawczej było 11 kobiet i 39 mężczyzn, proporcja ilościowa kobiet do mężczyzn wyniosła 4:1. Średni wiek chorych w chwili badania wynosił 31,16 lat. Najstarsza badana osoba miała 54 lata, najmłodsza 18 lat. W badaniach brali udział pacjenci z Oddziału Ortopedii i Traumatologii Szpitala im. dr J. Biziela w Bydgoszczy po artroskopowej rekonstrukcji więzadła krzyżowego przedniego. W badaniach uwzględniono: kartę informacyjną pacjenta, wywiad chorobowy, zakres ruchomości, obwody ud, test szuflady przedniej, obciążanie kończyn dolnych wykonane na platformie równoważnej MTD Control, siły mięśniowej na fotelu tensometrycznym MTD Control, testy sprawnościowe (test biegu 40 m, test zatrzymania, test biegu po krzywej, hop test oraz step test), jak również ocenę subiektywną wyników leczenia według skal: Lysholma-Gillquista, IKDC i SWLS. Natomiast w niniejszej pracy zostały wykorzystane niektóre parametry dla rozwikłania postawionych zagadnień. W skład grupy kontrolnej wchodziło 50 zdrowych ochotników. W grupie kontrolnej było 22 kobiet i 28 mężczyzn, proporcja ilościowa kobiet do mężczyzn wyniosła 2:1. Średni wiek ochotnika z grupy kontrolnej w chwili badania wynosił 31,90 lat. Najstarszy uczestnik badania miał 62 lat, najmłodszy 20 lat. Badanie na platformie tensometrycznej MTD Control. Do testu obciążenia kończyn dolnych w pozycji stojącej wykorzystano platformę tensometryczną MTD Control firmy MTD System z oprogramowaniem Physio-Feedback dla Windows. Pozwala to oceniać obciążanie kończyn dolnych i stabilności stawu kolanowego. Pacjenci byli poddani czterem próbom statycznym, dwie wykonano z oczami otwartymi i dwie z oczami zamkniętymi, na platformie MTD Control. Pacjent w tej części badania stał swobodnie 4 x 40 sekund, z 5 minutowymi przerwami. Porównanie wyników uzyskanych przez grupy badawczą i kontrolną w poszczególnych testach subiektywnych: IKDC, Lysholma-Gillquista i SWLS.

Wyniki

Dla porównania nogi operowanej grupy badawczej, z nogami raz prawą, a raz lewą grupy kontrolnej wykorzystano test U Manna-Whitneya. Stwierdzono istotne statystycznie różnice pomiędzy badanymi grupami. Różnice najczęściej występowały w badaniu siły mięśniowej na fotelu tensometrycznym, gdzie nogi ochotników wykazywały istotną większą siłę mięśniową mierzoną dla mięśni prostowników w dwóch kątach 30° i 60° w łańcuchu otwartym i zamkniętym oraz dla mięśni zginaczy w kącie 60°, w łańcuchu otwartym i zamkniętym. Natomiast pomiary na platformie tensometrycznej nie wykazały istotnych różnic statystycznych. Wskazuje to, że grupa kontrolna wypadła istotnie lepiej, niż grupa badana. Do oceny postępów usprawniania chorych i ich skuteczności po urazie kolana, wygodnie jest zestawiać wyniki pomiarowe ludzi chorych z wynikami pomiarowymi otrzymanymi u ludzi zdrowych, stanowiącymi normę. Pomiary siły umożliwiają również określenie stosunku siły mięśniowej między kończynami jak również między przeciwstawnymi grupami mięśniowymi tj. agonista i antagonista.

Wnioski

Na podstawie przedstawionych w pracy badań własnych można sformułować następujące wnioski:

1. Zastosowanie platformy tensometrycznej MTD Control razem z oprogramowaniem do wyznaczania wskaźnika symetryczności zwiększa obiektywizm przy określeniu stanu funkcjonalnego pacjenta i zborności stawu po rekonstrukcji ACL.
2. Odbudowa siły mięśni zginaczy i prostowników stanowi istotny element zapewniający prawidłową funkcję stawu kolanowego.
3. Skale IKDC, Lysholma-Gillquista i SWLS są wartościowe jako ocena subiektywna, ale nie wykazały współzależności z wynikami badań obiektywnych.

So far conducted tests showed, that with structure the most exposed in the knee joint, there is a front cruciate ligament (ALC). They proved that injuring it caused the front instability of the knee. The long-term deficit can lead ligaments to the deepening instability of joint, and in consequence damaging menisci, the joint cartilage and to the appearance of degenerative changes. With setting the surgical treatment of acute, traumatic damage to the front cruciate ligament, restoring his continuity is, however with aim of the rehabilitation after ACL reconstruction, reconstructing the chattel and coherences of the joint, getting the increase in muscle power and endurances of muscles are. Comprehensive treatment operation - rehabilitation restoring the full function of the joint and the return of the patient to the practicing life are aimed and for reconstructing correct biomechanical conditions. All these elements influence the static and dynamic function limbs and to the general fitness of the sick person.

Tests were undertaken on account of the constantly increasing number of ACL injuries. they concern the considerable part of active young, professionally active people and constitute the substantial not only medical, but also social problem, because of long-term dismissals from the work, or of also premature passages to the disability pension. Finding new, universal instruments to the objective assessment of the functional condition of patients, will let for touching the program of streamlining up the person touched with ACL damage come back as soon as possible to professional, sports and social function.

With main aim of the non-invasive, as well as post-operative rehabilitation, restoring a lower limb full of the function of the knee joint and entire is. Action is directed at recovering the correct chattel, proprioception, powers of the coordination, as well as the possibly fast return of the patient to the activity of the everyday day, the work and the recreational activity or sports. Preventing repeat injuries is an important task of the process of streamlining and for overloading other parts of a body which compensate for the failure of the knee in the cinematic chain, during the diverse activity.

Many authors emphasize that the good mechanical stabilization of the knee joint not only gives the chance of recovering it to the correct function. It turns out that at least three mechanisms lead instabilities of the knee joint to the development after damaging the front cruciate ligament. Injuring the ACL ligament as the passive stabilizer of the knee joint causes the mechanical instability of joint. Secondly, simultaneously they undergo damage mechanoreceptors and free nerve endings being in a ligament what leads to the interrupt of ducts of bathyesthesia. Leading muscles controlling the knee joint for disturbing the coordination. Thirdly the increased wrong mobility of the unstable joint triggers changed reactions mechanoreceptors of other articular

structures what in the central nervous system the uprising of disturbed information being the source of incorrect sensations leads of the position and the move of the injured joint. Such a state of the knee joint can lead to disorders of the coordination nervously - muscle of muscles which control the joint. Such a knowledge lets us more widely look at problems of patients after reconstruction of the front cruciate ligament and associated with it with instability of the knee joint in the aspect of the "complex of the cinematic knee joint". Restoring the mechanical stabilization and appropriate dynamic interactions between OUN and receptors allows for recovering the correct function of the joint.

Objectives

Comprehensive treatment operation - rehabilitation restoring the full function of the joint and the return of the patient to the practicing life are aimed. Reconstructing correct balance of muscles of extensors and flexors of the knee joint is significant for getting the good coherence of the knee joint. An evaluation of the function of the knee joint is a main purpose of the work with muscle power, of control proprioception at patients in a year after performed reconstruction of the front cruciate ligament and assessing tests offered to the usefulness:

1. Examining the control visually - proprioceptive at sick persons after reconstruction of the front cruciate ligament with static tests.
2. Isokinetic evaluation of extensors and flexors of the knee joint at patients after reconstruction of the front cruciate ligament.
3. Subjective evaluation of the function of the knee joint after reconstruction of the front cruciate ligament.

Material

Altogether 100 persons took part in tests, from what a half is patients after reconstruction of the front cruciate ligament, the rest is healthy volunteers, belonging to the control group. There were 50 patients, at which reconstructions of the front cruciate ligament were performed on the Ward of Orthopaedics in the research group and of the Traumatology of the Hospital J. Biziel in Bydgoszcz. Tests were conducted in 12 months after the operating treatment and following after it of rehabilitation. There were 11 women and 39 men in the research group, the quantitative proportion of women to men amounted to 4:1. The medium age in the moment of the test took sick persons out 31,16 years. The oldest examined person was 54 years old, youngest 18 years.

50 healthy volunteers were included in a control group. In the control group it was of 22 women and 28 men, the quantitative proportion of women to men amounted to 2:1. The medium

age in the moment of the test took the volunteer out from the control group 31.90 of years. The oldest participant in the test was 62 years old, youngest 20 years.

Methodology

1. Examining on the platform tensometric MTD Ctrl.

In standing position a platform was used for the test of straining lower limbs tensometric MTD Ctrl of the MTD company System with the software Physio-Feedback for Windows. It allows to assess straining lower limbs and stabilities of the knee joint. Patients were subjected to four static attempts, two they made with eyes cut open and two with closed eyes, on the MTD platform Ctrl. The patient stood in this part of the test freely 4 x 40 of seconds, with 5 minute's recesses (fig. 1).

Fig. 1. Static test on the platform tensometric MTD Ctrl.

In tests they used the rate of the symmetricalness which is a quotient of the greater value to smaller of burdening every of limbs. The correct WS value will approach the unity, and results being located are regarded as the norm within the limits of from 1.00 to 1.15. The device performs the measurement of burdening lower limbs with frequency 1000 with the Hz. Since the measurement lasted 40 seconds he gives, these are 40000 variables saved in the EXEL program.

2. Examining on the armchair tensometric MTD Ctrl.

For checking the muscle strength a position was used to the measurement of the moment of the force of the isometric contraction, consisting of the armchair for exercises resistance, equipped with the head with sensors tensometric, connected to the computer with the help momentomer. It allows to assess muscle strength of lower limbs, in different home positions. Armchair tensometric MTD Ctrl of the MTD company System with the software Physio-Feedback for Windows. Patients were subjected to six attempts for static attempts on the armchair tensometric MTD Ctrl in two angles 30° and 60° in the opened and closed off chain for extensors in a sitting position and for flexors in the chain cut open and shut in the position of lying with front. Between attempts they were 8 minute's recesses.

Patients made for extensors one each for attempt in following placing: 30° in the opened chain (OKC), 30° in the closed chain (CKC), 60° in the opened chain (fig. 2), 60° in the closed chain (fig. 3), and for flexors in the chain cut open (fig. 4) and 60° in the closed chain (fig. 5).

Fig. 2. Static test for extensors 60° in the opened chain (the patient has hands loosely hung) on the armchair tensometric MTD Ctrl.

Fig. 3. Static test for extensors 60° in the closed chain (the patient holds on behind handles to the device) on the armchair tensometric MTD Ctrl.

Fig. 4. Static test for flexors in the chain cut open (OKC) on the armchair tensometric MTD Ctrl.

Fig. 5. Static test for flexors in the chain closed (CKC) on the armchair tensometric MTD Ctrl.

For the quantitative evaluation of curves of the measurement off the armchair tensometric the Ctrl was used MTD EXEL spreadsheet. the Value of the Rate of the Symmetricalness was counted by analogy, like in examining on the platform tensometric. The strong emphasis of a lower limb read out off the MTD armchair was a Ctrl divided by the lower stress, giving the WS result. in case of examining on the armchair tensometric the attempt to use the indicator was supposed to serve the symmetricalness for the evaluation of the pressure of lower limbs on sensors tensometric.

The correct WS value will approach the unity, and results being located are regarded as the norm within the limits of from 1.00 to 1.15. Such values were assumed in tests. Armchair tensometric MTD makes the Ctrl of record of the measurement with the frequency of 1000 Hz,

what at 25 second time of the measurement 25000 written results which are sent to averaging in the Excel program give. achieved results served for further statistical concluding.

3. Subjective assessment of patients.

Patients answered to the questions concerning the subjective evaluation of their state, in a year after the undergone treatment operation - rehabilitation. At this target universally used scales were applied: Lysholm-Gillquist 2000 IKDC (The International Knee Documentation Committee) Subiective Knee Evaluation of Forms and the Scale of Satisfaction from the SWLS life (Satisfaction with Life Scale). The sum of points in individual scales served for further statistical concluding.

Lysholm-Gillquist scale, is a spot scale taking the state of the function of the knee into account during the activity of the everyday day.

Table 1. Lysholm-Gillquist scale - criterion punctuation.

Lysholm-Gillquist scale	
98 -100	Excellently
93 -97	Very well
82 - 92	Well
66 -81	Satisfactory
≤ 65	Insufficiently

The International Knee Documentation Committee = IKDC, it subjective scale being used for an assessment of the level of the function. Questions were associated with symptoms, the sports activity and the function of the knee joint. The sum of points of fulfilled positions is divided by the maximum sum of points from all questions and accumulated through 100.

$$\text{IKDC Score} = \frac{\text{Total points filled the position}}{\text{Maximum total score of all questions}} \times 100$$

In such a way that the scale is interpreted 100 means the lack of restrictions in activities of the everyday life or sports activities or lack of symptoms. Higher results attest to the high level of the function and the low level of symptoms.

Scale of Satisfaction from the SWLS life = The Satisfaction Life Scale, it subjective evaluation of the quality of life, where the patient answers according to own feelings. There are

granted points depending on the given reply, and the sum of these points reflects the state of satisfaction from the life.

Table 2. SWLS scale - criterion punctuation.

Scale of Satisfaction from the life = SWLS	
35 -31	Very satisfactory
26 -30	Satisfactory
21 -25	Not very satisfactory
20	Indifferently
15 -19	Slightly not satisfying
10 -14	Not satisfying
5 - 9	Very much not satisfying

The group of 50 healthy volunteers was examined according to the same scheme, what research group.

Results and discussion

1. Results from the platform tensometric MTD Ctrl.

The first effort was performed by eyes cut open, but second at closed off because the lack of proprioceptive information can partly be compensated with the eyesight. Proprioceptors put up at muscles and sinews provide the brain with information about the muscle tone. Thanks to that we know how our limbs are well-behaved by closed eyes.

To the statistical estimation of differences between conclusions of the sign of the symmetricalness studied by eyes closed and cut open, they used the nonparametric Wilcoxon test. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be not substantial statistically. Rate of the symmetricalness (WS) is a $\geq$ numerical value 1. A state, in which WS assumes values considers itself the norm from 1.00 to 1.15. While examining patients got WS by eyes cut open mean 1.09 and by closed eyes 1.12. All values are within the limits of what's normal, but by closed eyes examined achieved the worse result. He attests to the fact that at the second attempt patients had greater problems (table 3)

Table 3. Comparing results of the rate of the symmetricalness (WS) on the MTD platform Ctrl of Wilcoxon for the group examined by eyes cut open and closed, with the test.

Parameter	Eyes cut open (N = 50)		Closed eyes (N = 50)		P
	M	SD	M	SD	
WS	1.09	0.07	1.12	0.10	0.1166

To the statistical estimation of differences between disintegrations of quantitative variables in another trial they used the nonparametric test for an operands at Mann-Whitney for two examined groups. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be not substantial statistically.

Rate of the symmetricalness (WS) is a $\geq$ numerical value 1. A state, in which WS assumes values considers itself the norm from 1.00 to 1.15. He results from the test, that control group and examined are located within the limits of the norm, in addition the one first fell out better, achieving the value closer to the unity (table 4).

Table 4. Comparing results of the rate of the symmetricalness (WS) on the platform tensometric MTD Ctrl in the examined and test group, with the test at Mann-Whitney.

Parameter	Examined gr. (N = 50)		Test gr. (N = 50)		P
	M	SD	M	SD	
WS eyes cut open	1.09	0.07	1.08	0.06	0.0647
WS closed eyes	1.12	0.10	1.08	0.04	0.1128

2. Results off the armchair tensometric MTD Ctrl.

A static measurement of the force is a next examined parameter for the limb used and not-used in the examined group and for the control group. An armchair was used for the test tensometric MTD Ctrl with the software Physio-Feedback for Windows. Essentially six trials for muscles of extensors were carried out four, after two for every angle 30° and 60° and for muscles of flexors two attempts.

By angle 30° for muscles of extensors two attempts were performed one in the opened chain, and second in the closed chain from 8 with minute's recess between.

To the statistical estimation they used the Wilcoxon test for comparison of limb used with the not used limb. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be substantial statistically for the second attempt in the closed chain.

Analyzing mean of the pressure of parameters for everyone appointed as it turned out maximum values were achieved by the used leg.

The made movement in the opened cinematic chain is characterized by a high rate of speed and a freedom of movement, but a lower stability. However the made movement in the closed cinematic chain is characterized by a greater stability, but a smaller acceleration. Larger muscle teams which work inversely, are involved where attach becomes final initial, and initial final.

To the statistical estimation of comparing the rate of the symmetricalness for muscles of extensors by the opened and closed chain they used with Wilcoxon test. The difference turned out to be not substantial statistically (table 5).

Table 5. Comparing results of the rate of the symmetricalness (WS) on the armchair tensometric MTD with Ctrl for muscles of extensors in the chain opened and closed of examined group, with the Wilcoxon test.

Parameter	Opened chain (N = 50)		Closed chain (N = 50)		P
	M	SD	M	SD	
WS (30 ABOUT)	1.31	0.28	1.37	0.38	0.3640

To the statistical estimation of the gravity of differences between independent groups in another trial they used the nonparametric test at Mann-Whitney. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be substantial statistically.

Rate of the symmetricalness (WS) is a $\geq$ numerical value 1. A state, in which WS assumes values considers itself the norm from 1.00 to 1.15. It results from the test that the control group fell out better, achieving the value closer to the unity (table 6).

Table 6. comparing results of the rate of the symmetricalness (WS) for muscles of extensors on the armchair tensometric MTD Ctrl in the examined and test group, with the test at Mann-Whitney.

Parameter	Examined gr. (N = 50)		Test gr. (N = 50)		P
	M	SD	M	SD	
WS (30 about) opened chain	1.31	0.28	1.19	0.15	0.0390 *
WS (30 about) closed chain	1.37	0.38	1.18	0.14	0.0160 *

By angle 60° for muscles of extensors two attempts were performed one in the opened chain, and second in the closed chain from 8 minute's recess between.

To the statistical estimation they used Wilcoxon test for comparison of leg used with the not used leg. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be substantial statistically for attempts in chains cut open and closed.

Analyzing mean of the pressure of parameters for everyone appointed as it turned out maximum values were achieved by the used leg.

To the statistical estimation of comparing results of the rate of the symmetricalness for muscles of rectifiers by the open and closed chain they used the test Wilcoxon. The difference turned out to be not substantial statistically (table 7).

Table 7. Comparing results of the rate of the symmetricalness (WS) on the armchair tensometric MTD with Ctrl for muscles of extensors in the chain opened and closed of examined group, with the Wilcoxon test.

Parameter	Opened chain (N = 50)		Closed chain (N = 50)		p
	M	SD	M	SD	
WS (60 ABOUT)	1.32	0.36	1.34	0.45	0.9494

To the statistical estimation of the gravity of differences between independent groups in another trial they used the nonparametric test at Mann-Whitney. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be substantial statistically.

Rate of the symmetricalness (WS) is a $\geq$ numerical value 1. A state, in which WS assumes values considers itself the norm from 1.00 to 1.15. It results from the test that the control group fell out better, achieving the value closer to the unity (table 8).

Table 8. comparing results of the rate of the symmetricalness (WS) for muscles of extensors on the armchair tensometric MTD Ctrl in the examined and test group, with the test at Mann-Whitney.

Parameter	Examined gr. (N = 50)		Test gr. (N = 50)		p
	M	SD	M	SD	
WS (60 about) opened chain	1.32	0.36	1.16	0.16	0.0014 *
WS (60 about) closed chain	1.34	0.45	1.14	0.13	0.0011 *

In the position of lying with front for muscles of flexors two attempts were performed, one in the opened chain, and second in the closed chain from 8 minute's recess between.

To the statistical estimation for comparison of leg used with the not used leg they used the Wilcoxon test. The difference turned out to be substantial statistically for both attempts. Analyzing mean of the pressure of parameters for everyone appointed as it turned out maximum values were achieved by the used leg.

To the statistical estimation of the next relation they used the Wilcoxon test for comparison of two trials for muscles of flexors in the opened and closed chain. The difference turned out to be not substantial statistically (table 9).

Table 9. Comparing results of the rate of the symmetricalness (WS) on the armchair tensometric MTD with Ctrl in the chain opened and closed for muscles of flexors in the examined group, with the Wilcoxon test.

Parameter	Opened chain (N = 50)		Closed chain (N = 50)		p
	M	SD	M	SD	
WS	1.61	0.90	1.50	0.64	0.3751

To the statistical estimation of differences between disintegrations of quantitative variables in another trial they used the nonparametric test for an operands at Manna-Whitney for two groups examined and test. As the materiality level a $p \leq$ value was assumed 0.05. The difference turned out to be substantial statistically.

Rate of the symmetricalness (WS) is a $\geq$ numerical value 1. A state, in which WS assumes values considers itself the norm from 1.00 to 1.15. It results from the test that the control group fell out better, achieving the value closer to the unity (table 10).

Table 10. comparing results of the rate of the symmetricalness (WS) on the armchair tensometric MTD Ctrl in the examined and test group for muscles of flexors, with the test at Mann-Whitney.

Parameter	Examined gr. (N = 50)		Test gr. (N = 50)		P
	M	SD	M	SD	
WS opened chain	1.61	0.90	1.19	0.16	0.0013 *
WS closed chain	1.50	0.64	1.32	0.35	0.1648

3. Results of comparing the rate of the symmetricalness for muscles of extensors and flexors.

Muscles of a lower limb after immobilizing or the injury should be rebuilt in three motor plains, therefore muscles are possible: quadriceps will pretend, ischiatic - shin, big-bellied calves, as well as muscles bending, dissuading both the thigh driving the thigh and twisting muscles and the tibia.

To the statistical estimation of comparing the flat of extensors and the flat of flexors in the research group they used the Wilcoxon test. The difference turned out to be substantial statistically at $p = 0.0161$ for the opened chain and $p = 0.0687$ for the closed chain (fig. 6).

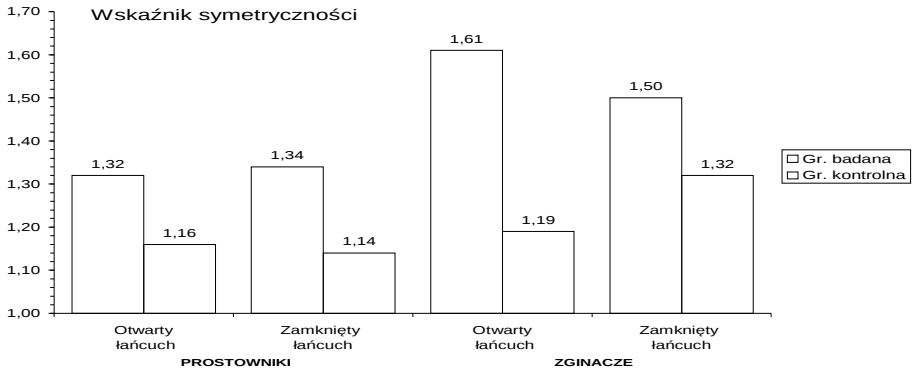

Fig. 6. comparing results of the rate of the WS symmetricalness on the armchair tensometric MTD Ctrl in the examined and test group, for muscles of flexors and extensors by angle 60°, in the opened and closed chain.

4. Evaluation results subjective.

The changeability of checked parameters was described in the form of the arithmetic mean based on the get sum of points in applied SWLS scales, Lysholm-Gillquist, IKDC for the group studied and test.

Drawing 7 depicts sums of points get in individual SWLS scales, Lysholm-Gillquist scale and IKDC with specifying for the research group and test.

Scale of the quality from the SWLS life, in which examined answered according to own feelings. Depending on the given reply points were granted, and the sum reflected them state of satisfaction from the life. The research group was in a period of punks 21 - 25 what the little satisfying state indicates from the life, however control group in period 26 - 30 this result indicates the satisfying state from the life.

The Lysholm-Gillquist scale served for the subjective evaluation of the state of the function of the knee in activities of the everyday day. The research group achieved good results and was in a period of points 82 - 92, however control group very good which answers 93 - for 97 points.

In case of the IKDC scale which is used for a subjective evaluation of the function in activities of the everyday day. Closer result 100 for points attests to the high level of the function and the low level of symptoms. The research group got the mean based on the collected sum of points which takes out 74.04 points, but the control group 81.62 points.

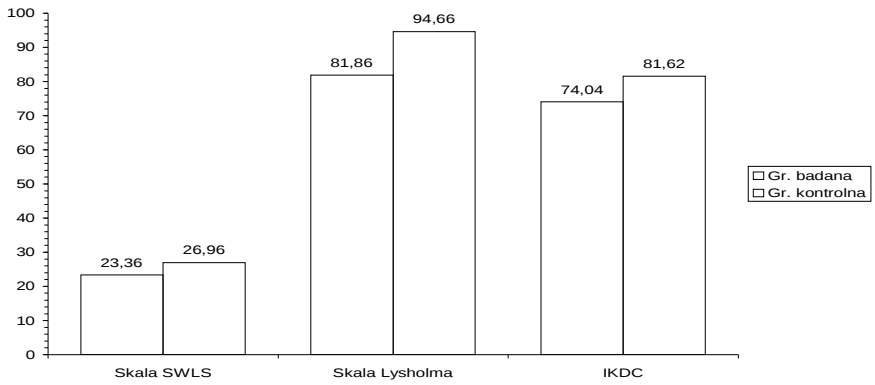

Fig. 7. Comparing results achieved in individual subjective scales for the examined and test group.

5. Comparing achieved results by groups research and test in individual subjective tests: IKDC, Lysholm-Gillquist and SWLS.

A test was used for statistical concluding at Mann-Whitney for comparison of the examined group and the control group. They stated essential statistically differences among examined groups in the Lysholm-Gillquist scale and the IKDC scale at $p < 0.0001$.

It shows that the control group fell out significantly better, than the examined group. To the evaluation of progress of streamlining sick persons and their effectiveness after the injury to the knee, comfortably he is to compare measuring results of ill people with measuring results received at healthy people, constituting the norm (table 11).

Table. 11. Comparing results achieved in individual subjective tests of the examined group and the control group, with the test at Mann-Whitney.

Parameter	Examined gr. (N = 50)		Test gr. (N = 50)		P
	M	SD	M	SD	
SWLS scale	23.36	5.47	26.96	5.29	0.0015 *
Lysholm-Gillquist scale	81.86	11.39	94.66	9.11	< 0.0001 *
IKDC	74.04	9.85	81.62	9.73	< 0.0001 *

Effort of the entire team healing, compound of the surgeon of the orthopaedist and the physiotherapist, is subjected to incessantly monitoring; at this target scales, questionnaire forms and devices are used for an evaluation. The measurement of various parameters is used for an objective assessment of progress of the patient, of choice about appropriate strategies of rehabilitation proceedings and for increasing the effectiveness and the job security.

To the evaluation of the stability and disorders proprioception the knee joint after ACL reconstruction was conducted examining on the platform tensometric MTD Ctrl which is a method of the measurement of the force of the pressure on base. At patients with dysfunctions of the motor organ he achieves disorders of the automatic control of the attitude.

Following rehabilitation literature associated with methods of streamlining in different disease entities, it is possible search publications about using the rate of the symmetricalness (WS) in the evaluation of effects of the rehabilitation of patients with hemiparesis, as well as after amputations. This method fulfills conditions of safety, of the objectivity, the legibility and the simplicity in the workmanship and the possibility of using to everyone cases. With reference to the above, they decided to make an attempt using this method in case of patients after reconstruction of the front cruciate ligament for the evaluation of the coherence of the joint and effects of conducted rehabilitation.

Based on conducted tests of straining lower limbs in the research group and the control group, average values of the set rate of the symmetricalness were accepted (WS) of straining lower limbs with eyes cut open, but next with eyes closed which the correct value holds within the limits of from 1.00 to 1.15.

Introduced measurement by closed eyes, is aimed at examining bathyesthesia and comparing whether examined behave identically in different conditions. Proprioceptors of the body are put up at muscles and sinews. They provide the brain with information about the muscle tone. Thanks to that for sense we know how our limbs are arranged, without looking. Deficiency proprioception can be compensated with the eyesight. How it is already known, immobilizing the body, the injury to soft tissues disturb proprioception. For her rebuilding is one of important tasks of the whole process of streamlining.

After the conducted test it turned out, that WS results of the examined group, don't run away from the control group. After setting the rate of the symmetricalness it is possible to come to the conclusion, that examined group of the rehabilitation in the result undergone after the treatment arthroscopic a stability of the knee joint not only corrected reconstruction, but also improved proprioception in comparing to healthy volunteers.

Dzierżanowski, Kazimierczak, Hagner in own material examined 23 patients, in 12 months after reconstruction of the front cruciate ligament. Tests consisted on 30 of seconds free being based on the platform without the visual inspection of the computer monitor. Examining straining lower limbs at patients proved big relations existing between the state of the efficiency and the stability of the knee joint and results which patients reached. Additionally, these results were compared with results of traditional fitness tests. Where results fluctuated within the limits of

results unsatisfactory definitely less strained the used limb, clearly sparing her. If authors give, in some cases this action was deliberate, resulting from anxiety of another injury and the distrust to the used limb.

Destabilization deepens the fact of the fast muscle atrophy supplying the knee joint physically which perform the role of practicing stabilizers. Muscles also belong to organs of proprioceptive feeling. Musculotendinous individuals which correct functioning guarantees the dynamic stabilization, as well as the protection of the joint against injuries and the correct coordination of the move.

In presented tests strength of muscles of extensors and flexors of the knee joint was assessed for both groups research and test. For extensors in a sitting position examined persons made for two attempts, one in the opened chain, and second in the chain closed for two angles: 30° and 60° and for flexors of being in the position with front for two attempts, one in the opened chain, and second in the closed chain. For the evaluation of the statistical result of the functional test, on the armchair tensometric MTD Ctrl in examined groups, average values of the set rate of the symmetricalness were accepted (WS), as by analogy as in examining on the platform tensometric MTD Ctrl in the destination of examining the activity of the knee joint. For the correct value accepted the result being located within the limits of from 1.00 to 1.15. It isn't possible to compare using the rate of the symmetricalness with data in available literature what doesn't allow for taking further applications out. Yet they decided to use for the functional evaluation of the knee joint, the coherence and effects of the applied operating-rehabilitation treatment in examining persons after reconstruction of the front cruciate ligament.

At present it is known that after the injury to the knee muscles of a lower limb must be rebuilt in three motor plains. Therefore in the process of streamlining one should remember about these muscles among which he ranks: quadriceps will pretend, ischiatic - shin, big-bellied calves. One should keep an eye on extensors, bending, dissuading both the thigh driving the thigh, as well as twisting muscles and the tibia. Altogether mentioned groups they cooperate, and their appropriate attitude to oneself is necessary in the correct function of the entire limb.

The good result in the closed chain can attest to it, that closed off chain cinematic they involve large dynamic teams, reconstruct motor templates more functionally and components of powers are characterized by increasing in the relationship to cutting what is significant at streamlining the regenerating transplant. They ensure also a better, dynamic stability, tone muscles up simultaneously agonistic, agonistic muscle and antagonistic.

Comparing the rate of the symmetricalness for muscles of extensors and flexors in the research group, he turned out to be essential statistically. For the evaluation of the statistical relation

they used the nonparametric Wilcoxon test. From final years a belief that at exercises in the opened cinematic chain one should put the strong emphasis on the university class prevails of sciatic-shin muscles among notifications, since strengthening them balances antagonistic to ACL the effect of the quadriceps will pretend, present such a position O'Connor. In Hagner view weakening strength of sciatic-shin muscles towards the quadriceps of the thigh has a significant influence to worse results of curing after ACL reconstruction. in tests of this author achieved results showed the disturbed homeostasis between strength of flexors and extensors of the knee which turned out to be the cause of worse fitness results in the examined group of patients after ACL reconstruction.

Stolarczyk and co-authors in their examined group stated the muscle deficit in extensors. Laskowski, Reinking, Arangio, Fibiger and partners reached similar conclusions. Kwiatkowski in his tests compared strength of the quadriceps of the thigh of the used leg to the last person not-operated, where was also different in strength of this muscle.

In tests differently a situation of the knee in flexors used, in which the larger deficit in their power was observed towards extensors longed for Stolarczyk authors and co-authors. In Stolarczyk tests a fact is material, that sinews were taken for reconstruction of the ACL ligament from the muscle semiligament and slender what bigger weakening flexors than extensors could give. In presented tests, with material picked up for the transplant, there was a time off of the patellar tendon and it could contribute for considerable weakening extensors in the leg used compared with the control group.

Long-term immobilizing or the injury lead chattels to weakening muscle power, lowering the endurance, reducing the muscle mass, as well as the limitation of the scope in joints. The immobilised muscle sends wrong impulsation to the central nervous system what he causes, that the normal activity of the efferent road remains disturbed, and reaching impulses to muscles differ from physiological impulses. Additionally appearing pain stimuli leaving areas of injuring the joint cause changes in the blood supply and the metabolism of muscles on the involuntary road.

For comparison legs of the used research group, with legs time right, and time left the control group was used test at Mann-Whitney. They stated essential statistically differences among examined groups. Differences most oftentimes appeared in checking the muscle strength on the armchair tensometric, where legs of volunteers showed significant bigger muscle power measured for muscles of extensors in two angles 30 ° and 60 ° in the opened and closed chain and for muscles of flexors in angle 60°, in the opened and closed chain. However measurements on the platform tensometric didn't demonstrate statistical important differences.

It shows that the control group fell out significantly better, than the examined group. To the evaluation of progress of streamlining sick persons and their effectiveness after the injury to the

knee, comfortably he is to compare measuring results of ill people with measuring results received at healthy people, constituting the norm. Determining the relationship of muscle power between limbs as well as among opposing muscle groups i.e. the agonist and the antagonist also enable measurements of the force.

Group of Swedish scientists: Henriksson M. Ledin T. Good in research experiment made L. goal evaluation of the postural control at patients after reconstruction of the front cruciate ligament. Authors took results back both to the group of people healthy, as well as effected comparing between the used but not-used limb. They examined 25 patients after arthroscopic of ACL reconstruction. made Measurements with the help of the platform balance, in the aim of determining equivalent mechanisms and the postural control. Conclusions which sprang from the conducted test contralateral lower limb, to operated, also senses effects of breaking the ligament. Appointing cells of therapy it is worthwhile paying attention invalid operating-rehabilitation to the functional state of the not-used leg. The not-used leg, from the moment of the injury, is exposed on of overloading. Due to it, that every person in the moment of the appearance of pain, he acts subconsciously, lightening the injured leg, simultaneously a weight transfers bodies to the better leg.

At the work, for the evaluation by the sick person of the medical condition, universally used scales were exploited: Lysholm-Gillquist, IKDC and SWLS of the quality of life. Olejniczak and Wrzostek, based on conducted own tests they published, that the conducted rehabilitation did good the subjective evaluation of the clinical state at sick persons with the instability więzadłową front of knee joint.

They effected the subjective evaluation of the function of the joint at help to the IKDC scale = The International Knee Documentation Committee. Each of patients filled in the questionnaire of the subjective evaluation concerning the knee joint. Questions were associated with symptoms, the sports activity and the function of the knee joint. A number of scored points decided on the result. Examined after ACL reconstruction received satisfactory results getting on average 74.04 points, but the control group 81.62.

Similarly Stolarczyk, in his tests gives, that in the subjective evaluation using the IKDC scale majority examined positively assessed results of the treatment.

For comparison and evaluations of the usefulness, a Lyshom-Gillquist scale, in which patients answered the questions concerning the subjective evaluation of the knee joint about the function used was introduced. The spot scale drawn up by Lysholm-Gillquist take the state of the function of the knee into account during classes of the everyday day, and of sports classes, she was

examined under the clinical and static account by Górecki and Kwiatkowski, and these tests confirmed the practical usefulness for her.

Keeping up with different scientific news reports about the evaluation of effects of the treatment, it is possible to encounter the also attempt of the evaluation of the quality of life and the sociological evaluation at patients after reconstruction of the front cruciate ligament. At the work such a SWLS scale was exploited = The Satisfaction With Life Scale, in which these are patients answered about the quality of life. However it isn't possible to compare this result with data from available literature what doesn't allow for taking further applications out. In response to the usefulness of applied tests, comparing used Lysholm-Gillquist scales, IKDC and SWLS for the research group and the control group is. In all cases statistical, set important differences were noticed with nonparametric Wilcoxon test.

Conclusions

Based on own tests described at the work it is possible to express the following conclusions:

1. Applying the lorry tensometric MTD Ctrl with providing the symmetricalness software for setting rate increases the objectivity at determining state of the functional patient and the coherence of the joint after ACL reconstruction.
2. The reconstruction of strength of muscles of flexors and extensors constitutes the crucial element ensuring the correct function of the knee joint.
3. IKDC scales, Lysholm-Gillquist and SWLS are valuable as the subjective evaluation, but didn't demonstrate the interdependence with findings objective.

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