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Obecnie odnotowywana jest rosnąca ilość i wysokość roszczeń pacjentów względem podmiotów leczniczych oraz osób wykonujących zawody medyczne. W latach 2011-2016 do sądów cywilnych pierwszej instancji wpłynęło ponad 5 400 spraw z zakresu ochrony zdrowia, a kwoty odszkodowań oraz zadośćuczynień jakich żądają pacjenci są z roku na rok coraz wyższe. Potwierdzają to dane statystyczne Ministerstwa Sprawiedliwości, z których wynika że w latach 2014–2017 kwota zasądzanych zadośćuczynień i odszkodowań wzrosła o 70% w porównaniu do lat ubiegłych.

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Sąd Najwyższy w czerwcu 2018 r. na rzecz rodziców i trwale niezdolnego do samodzielnego funkcjonowania dziecka zasądził kwotę zadośćuczynienia w wysokości 3 235 000 zł. W tym precedensowym wyroku Sąd Najwyższy stwierdził, że cierpienie z powodu kalectwa dziecka można traktować podobnie jak śmierć.

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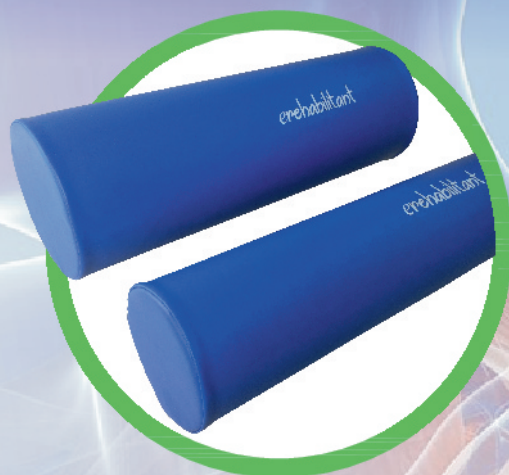
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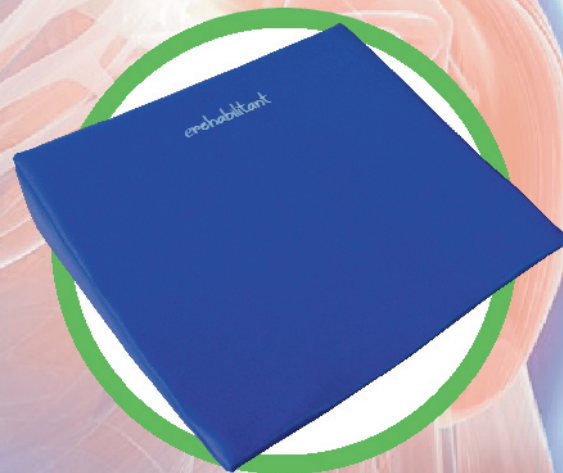
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Obecne podejście do postępowania posturalnego u pacjentów z mózgowym porażeniem dziecięcym

A Current Approach to Postural Care for Patients with Cerebral Palsy

当前对小儿脑性瘫痪的体位管理方式

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Streszczenie

Rehabilitacja stanowi zasadniczy element postępowania leczniczego w mózgowym porażeniu dziecięcym (MPD). Jednym z jej celów jest przeciwdziałanie wtórnym deformacjom mięśniowo-szkieletowym. Stosowanie różnorodnych technik w celu minimalizacji nieprawidłowości postawy oraz ułatwienia funkcji określane jest mianem postępowania posturalnego. Obejmuje ono odpowiednie pozycjonowanie pacjentów w pozycji leżącej, siedzącej i stojącej połączone z fizjoterapią.

Cel. Celem pracy jest przedstawienie aktualnego podejścia do postępowania posturalnego w oparciu o przegląd piśmiennictwa. Wnioski. Jak dotąd nie opracowano ogólnie przyjętych zaleceń dotyczących wsparcia pozycji leżącej, siedzącej i stojącej w ramach programu posturalnego. Większość badań w tym obszarze to badania przeprowadzane na nielicznych grupach, z krótkim czasem obserwacji. Stąd trudna jest ocena skuteczności programu posturalnego, choć wyniki niektórych badań wskazują go, jako obiecującą metodę przeciwdziałania neurogenemu zwicnięciu stawu biodrowego. Uznaje się, że odpowiednie wsparcie pozycji ułatwia podjęcie aktywności i wspiera uczestnictwo osób z MPD, zwiększa poczucie kompetencji i motywuje do działania. Ze względu na zmiany konstrukcyjne sprzętu i wprowadzanie na rynek nowych rozwiązań istnieje pilna potrzeba prowadzenia dalszych badań w tym obszarze.

Słowa kluczowe:

postępowanie posturalne, mózgowie porażenie dziecięce

Abstract

Introduction. Rehabilitation is an essential component of therapeutic treatment in cerebral palsy (CP). One of its objectives is to prevent secondary musculoskeletal deformities. The use of various techniques to minimize postural abnormalities and enhance functions is defined as postural care (or postural management). It encompasses proper patient positioning in the lying, sitting and standing positions combined with physical therapy.

Purpose. The purpose of the study is to present a current approach to postural care based on the review of source literature.

Conclusions. No generally accepted recommendations on supporting lying, sitting and standing positions have not been developed under the postural management programme so far. The majority of studies related to this field are conducted on not very numerous groups, with short periods of observations only. Thence it is difficult to assess the effectiveness of the postural management programme, although some study results indicate it as the promising method of neurogenic hip dislocation prevention. Appropriate postural support is deemed to facilitate CP patients' activity and participation, improve their sense of competency and motivate them to act. Due to changes in equipment designs and new solutions launched, there is an urgent need to continue related research.

Key words:

postural management, cerebral palsy

摘要

简介。康复是小儿脑性瘫痪治疗的基本要素之一，目的在对抗继发性的肌肉骨骼畸形，运用各种技术及功能促进以将姿势错误最小化被称为体位管理，包括患者躺卧、坐着及站着时的适当定位并结合物理疗法。

目标。研究目的在呈现以文献评析为基础的当前体位管理方式。

结论。截止目前为止，体位协助计划中未就躺卧、坐姿及站立等姿势制定普遍可接受的建议，该领域的大多数研究都是针对少数群体进行，观察时间短，因此难以评估体位计划的有效性，尽管部分研究结果显示其为对抗髋关节神经原性脱位为有希望的方法。一般认为适当的姿势支撑有助于开展活动并协助小儿脑性瘫痪者参与，增强其能力感并鼓励其行动。由于设备的结构变化及市场上新解决方案的引入，在该领域进行进一步研究的需要格外迫切。

关键词：

体位管理、小儿脑性瘫痪

Introduction

Cerebral palsy (CP) is regarded as the most common cause of motor disability in childhood [1]. Based on meta-analysis conducted by Oskoui et al. [2], it can be stated that the overall prevalence of CP estimated from 49 selected studies has been stable over the last decade and is 2.1 cases per 1,000 live births.

Cerebral palsy is a syndrome with the dominating symptom being the disorders of posture and movement, progressing over time, despite the static nature of central nervous system damage. The disorders are the consequence of increasing paresis and/or spasticity which initiate the process of formation of secondary deformities that are fixed by maintaining improper postures for long periods of time [3, 4]. Rehabilitation is an essential component of therapeutic treatment in CP. It is completed by surgeries, pharmacotherapy, occupational, educational and logopaedic therapies and the use of orthopaedic equipment [5]. Neither generally accepted physical therapy proceedings nor optimal CP patients rehabilitation methods have been developed or indicated so far. The efficacy of many therapies, even recognized as either the leading ones (e.g., the NDT-Bobath approach, Vojta therapy) or supplementary ones (e.g., dolphin-assisted therapy, hyperbaric oxygen therapy), has not been verified through reliable research [6]. The purpose of the study is to present a current approach to the use of auxiliary equipment for CP patients under the postural care programme.

Postural Care

Population-based studies indicate that 35% of children and young people with CP, aged 3-18 years, are not able to stand on their own. This percentage grows up to 84% for people categorised into Gross Motor Function Classification System (GMFCS) levels IV and V. Only 42% of people under consideration can sit on a regular chair [7]. The use of more upright posture supports and the equipment enabling position change and locomotion is one of the priorities of the CP rehabilitation procedure.

The use of orthotic devices (orthoses, orthopaedic footwear, auxiliary equipment, such as: wheelchairs, mobility walkers, standing frames, tripods, etc.) together with the modification of the environment are assumed to be an integral part of physical therapy. Their purpose is to complete the structural and functional defects of the motor system with mechanical structures [8]. The use of equipment in CP patients is part of the strategy defined as postural care (or postural management) which, beside appropriate equipment, also applies positioning techniques and activities to prevent and/or delay secondary motor system deformities [9]. Its rudiments have been developed by Chailey Heritage Clinical Services as a neurogenic hip dislocation prevention programme. It assumes that appropriate child positioning aimed at preventing contracture formation combined with a rehabilitation programme can reduce the number and extent of secondary problems [10]. In 2006, Gericke [11] presented the assumptions and definition of postural management developed by the group of experts. In their opinion, it is an integrated approach to patients encompassing all activities and

interventions which impact on an individual's posture and function. The postural management programme is tailored specifically for each patient and may include special seating, night-time support, standing supports, active exercises, orthotics, surgical interventions and individual therapy sessions. Decisions on applying those are made depending, among other things, on the patient's clinical condition, activity level, pain suffered and long-term prognosis. The application of the 24-hour management programme for patients in GMFCS levels IV-V is recommended in the lying position - implemented right after patient's birth, in the sitting position - implemented at 6 months of age, in standing position - implemented at 12 months of age. [10].

In practice, the 24-hour postural management programme focuses on achieving a symmetrical posture which is to keep muscle balance in the hip joint area and prevent the sequence of changes leading to the limitation of active and passive mobility of adductors, flexors and rotators of the hip joint, fixed flexion and adduction contractures, deformation of the proximal end of the femur resulting in hip subluxation or hip dislocation with secondary acetabular deformity. Robb and Hägglund [12] emphasize that the causes of neurogenic deformities of the hips have not been fully clarified. Spasticity is regarded as the key pathogenic factor, however hip dislocations relate also to hypotonic conditions. Another, equally significant factor can be remaining in asymmetrical postures for long periods of time. Also the cause and effect relationship between pelvic obliquity and neurogenic scoliosis vs. neurogenic hip dislocation still remains unclear. In the group of 747 CP patients categorised into GMFCS level V, significant dependencies were observed between the directions of scoliosis and windswept hip deformity (the convexity of scoliosis opposite to the direction of hip deformation). Significantly more cases were recorded with windswept hip deformities to the right, pelvic obliquity with the left side lowered, hips subluxed on the left and lower lumbar/lower thoracic spinal curves convex to the left [13, 14]. The purpose of postural support is to obtain an optimal posture which should be symmetrical, comfortable, stable and functional. That is not possible to achieve in every case, and then the selection of the posture should result from the postural management programme priority and be a compromise between the degree of correction and posture functionality. Beside contracture and deformity prevention, the priority can be:

- ensuring a stable initial stance for everyday activities (including taking meals, communication),
- facilitating intentional movements,
- improving head control,
- assuming a more upright posture, even though maintaining it on one's own is not possible,
- regular changes of posture during the day,
- improvement of life comfort,
- reduction of pain [9, 15, 16, 17].

Physiotherapists are most often engaged in the preparation of the postural management programme. However its implementation and maintenance depends on the experience and expertise of the whole therapeutic team as well as the

accessibility and price of the equipment offered [18, 19]. The commitment of patient's parents/carers (mental, time related and financial), the understanding of the programme rules and believing in the appropriateness of actions is of key importance for the programme. Programme success is also determined by its acceptance by the patient. People with severe forms of the syndrome, most exposed to deformities requiring the maximum support, are often not able to use 24-hour postural management. They cannot signal their discomfort or pain in a manner that is clear to the audience. Please note that not all CP patients require postural support. Such interventions they will not be effective in every person that needs them [15]. The knowledge of the effectiveness of postural care in CP patients is insufficient, and so is the number of related reliable studies. It is difficult to compare their results due to the diversity of the interventions used, or the lack of generally accepted guidelines for programme implementation (postures assumed, equipment used) [15-17].

Lying Position

There are various patterns of positioning individual body segments observed in lying CP patients, depending on postural tone, including head control, intensity of spasticity and global muscle synergies and the prevalence of tonic activity. The possibilities of maintaining posture linearity and symmetry decrease along with the increase of the GMFCS level. Posture support during lying consists in using equipment, such as bolsters, bed wedges, cushions, beanbags, belts or special positioning systems. It can also include the use of an anti-bedsore mattress or a nursing bed. They are designed to maintain the proper body posture which should be characterised by evenly distributed weight, symmetric positioning of the pelvis, the hips slightly abducted (approximately 20°) and flexed (approximately 20°), the knees in a slightly flexed position and symmetric positioning of the head with the chin close to the chest. Lumbar support is recommended during supine lying, to be used from the level of the posterior superior iliac spine to the end of the lumbar region, to ensure pelvic anteversion [10, 17].

The purpose of supporting the posture during lying is to prevent deformities, especially neurogenic hip dislocation, to improve sleep quality and duration and to improve patient safety during sleep. Postural support can be used for lying face down, supine lying and side lying, during both rest, including the night's rest (recommended use of support for minimum 6 hours), and activity. The use of the postural management programme during the day does not usually raise any objections from the therapeutic team and carers, especially if it concerns patients with severe forms of CP. However maintaining the forced posture for long periods of time during the night's rest is controversial, even though it is regarded as effective due to a longer impact (6-8 hours) and the lack of any mobile activity requiring patient's muscle tone. It seems that lying posture support during sleep should be the essential component of postural care. Sleep disorders, which percentage is higher than in the population of healthy children and reaches even 50%, can be a contraindication to its implementation [10, 20]. Sleep disorders can be induced by spasticity, motor system deformities, pain, respiratory,

gastrointestinal, sensory disorders, epilepsy and environmental factors [21]. Among all types of equipment, the night positioning systems are indicated as those most frequently rejected by parents due to deterioration of sleep quality and discomfort resulting from maintaining one forced position throughout the night. Other reasons for giving it up are: the lack of visible, quick postural benefits, equipment sizes or problems with keeping it clean [16, 17, 22].

Sitting Position

A child assumes a sitting position between 6 to 9 months of age. Maintaining the sitting position requires control over the positioning of the key body segments: pelvis, trunk and head [23]. It is the basis for any upper limbs' activity, and it gives an opportunity to play, socialise and rest (it is less burdening than standing). A proper pelvic position is the key to sitting stability. In the posture during standing, the pelvis is set in the anteversion, and the hip joint is extended. The centre of gravity of the body lies along the line joining S3 vertebra and the pubic symphysis, and the pelvis maintains a balanced state. In the sitting position with posture supported by the ischial tuberosities, pelvis balance is unstable due to the anatomical shape resembling a rocking chair rocker, which causes an inclination for pelvic retroversion. The activity of pelvic and trunk muscles is required to maintain the position or, if there is none, an external support in the form of a seat. In case of insufficient postural control you can observe compensation, namely attempts to support the posture from the front (on the knees, table top), with pelvic anteversion, flattening of lumbar lordosis and increase in thoracic kyphosis, weight transmitted via the ischia and the posterior surfaces of the thighs or posterior support (on a seat backrest) with pelvic retroversion, shallowing of lumbar lordosis, increase in thoracic kyphosis, increase or reversal of cervical lordosis and weight transmitted via the sacrum and coccyx. In CP, pelvic anteversion can result from hip flexion contracture or the weakening of the abdominal muscles. It can induce secondary excessive adduction of the lower limbs. Whereas pelvic retroversion can result from the shortening of the ischio-crural muscle group, hip extensor spasticity and the weakening of the erector spinae and abdominal muscles [24-26].

In children with CP, a deficit in trunk balance is visible in the sitting position, and defence is insufficient. The sitting position with the lower limbs in the intermediate position is hard to achieve. They are usually adducted, rotated inward, often positioned asymmetrically. The sitting position base is narrow, the pelvis is in the retroversion, the back is rounded to compensate for insufficient hip flexion, the chin moved forward. Another pattern of the sitting position is sitting between the feet. It is a preferred position for playing due to the increased support area, the release of the upper limbs from the supporting functions and high sense of safety. However, remaining in this position for a longer period of time enhances an inclination to position the lower limbs in an undesirable pattern of adduction and inward rotation.

The position defined as 90-90-90 (90° knee and ankle joint flexion) with accompanying trunk erect setting is regarded as

the correct sitting position. However, this position is hard to maintain for a longer period of time and that is why assuming a position with backrest reclining within the range of 10-20°, together with trunk and forearm support, is suggested. This position is not recommended for people with CP. Instead, seat modifications along the sagittal plane are suggested by changing the angle of the seat base, including the backrest, or the backrest only (reclining, inclining) and seat base modifications (e.g., saddle shaped, a seat wedge used). Very few and low quality surveys in this area, and especially their divergent results, make it impossible to state decisively which method of seat adjustment is the optimal one [27, 28]. Pountney et al. [10], recommend the upright seat position which is intended to reduce an inclination to assume an extremely erect or flexed posture, improve the area of vision and eye contact with the environment, ensure the correct swallowing patterns and develop the sitting skills.

Posture support during sitting should encompass children with CP from 6 months of age [11]. The literature does not define the minimum time spent in the sitting position. It is recommended as the position appropriate for taking meals, performing activities (playing, learning), selected care activities and rest (a rest chair) [10]. The postural management programme uses seats (floor seats, saddle seats, mobile, individually adjusted seats), rehabilitation chairs, seat wedges, seat liners, abductor belts, stabilization vests. Bath seats or bath chairs can also be used for nursing activities.

The purpose of using posture support during sitting under the postural management programme is to [23]:

- normalize muscle tone,
- maintain posture linearity and symmetry, prevent secondary motor system deformities,
- create a stable support base to improve control over the positioning of the upper body segments (trunk and head) and to facilitate the activities of e.g., the upper limbs,
- achieve the safe and comfortable sitting posture conducive to relaxation,
- prevent bedsores,
- assist the functions of the respiratory, digestive and cardiovascular systems.

The seat dedicated to people with CP should compensate for the gaps in the active stabilization of the body, prevent compensations passively supporting stability (pelvic retroversion, trunk asymmetry, crossing of the lower limbs), prevent secondary deformities. It should be safe, it should support person's independence and it should be easy to operate. The use of the parts supporting the upper trunk sections in the sitting position is determined by the stability of the lower sections, thence the seat should ensure stability in the direction from the pelvis upward [24]. As in the lying position, the symmetrical posture is the optimal pattern. The degree of abduction of the lower limbs is lower than in lying; the intermediate position is also a preferred position for them. Due to the limited possibilities of working against gravity, maintaining the corrected posture during sitting can be more difficult.

To achieve the appropriate position, the majority of seat structural components should be adjustable. The seats can also be equipped with posture correction and support devices/accessories: i.e. sacral pads, lumbar supports, abduction belts, hip belts, kneeblocks, stabilization vests, trunk lateral supports. A patient condition and ability to maintain the sitting position determines which of those will be selected. As in case of the seat settings, no rules of how to use them have been developed yet. According to Carlson et al. [24], a flat seat does not ensure pelvis stability, because this setting prevents the femoral shaft from assuming the horizontal position towards its base. Pountney et al. [10], recommend the use of a flat cushion at the level of the ischial tuberosities, tilted forward 15° from the edge of the buttocks toward the edge of the seat, for femoral stabilization. Beside the cushion, the position of the pelvis is additionally stabilized by the sacral pad and the kneeblock. The pad extending from the seat base to the lumbosacral junction should be curved (like the backrest) and set at an angle of 90° towards the base. It generates the force balanced by kneeblock pressure. The kneeblock also ensures hip abduction and adduction control and pelvic symmetry control. The forces generated by the kneeblock can operate along the axis parallel to the axis of the long femur (applied at the front of the knee, the kneeblock raised at an angle of 5° to reduce pressure on tibial tuberosity) or perpendicular to it (applied at the medial side of the knee). This enables the adjustment of lower limb positions in windswept hip deformity.

Standing Position

A child assumes a standing position between 9 to 10 months of age. (supported getting up). In that period, the iliopsoas muscle is not fully lengthened, therefore the pelvis is positioned in the considerable anteversion. During physiological development, the pelvic inclination angle changes with age, becoming stabilized in adulthood. It depends on the activity of the gluteal muscles, abdominal muscles, erector spinae and the quadratus lumborum muscle and the iliopsoas muscle. Initially, the lower limbs are held in a flexed position, and the child improves active hip and knee extension over time. Shifting from the varus through valgus alignment, the child reaches the axial alignment at the age of 6-7 years [23].

The standing pattern in people with CP is asymmetrical in the majority of cases, depending on the level of increased muscle tone and postural tone. The support base is narrow, which disturbs balance. The lack of hip and knee extension is compensated by excessive pelvic anteversion. Loads on the feet are asymmetrical. The right foot is usually fully positioned on the floor, the left foot unloaded – is turned inward and supported by the toes. With age, changes most often encompass the increase of flexion, adduction and inward rotation of the hip joint, flexion or hyperextension of the knee joint and the equinus (horse-like) setup of the foot.

In case of children with CP not able to maintain the standing position on their own, its support should be used from 12 months of age [11]. The moment of applying supported

standing shall depend, among other things, on the CP form, the purpose of supported standing, patient's age and capabilities. Pountney et al. [10], recommend standing from minimum 30 minutes every day. Paleg et al. [29], based on the review of supported standing studies, recommend maintaining the standing posture for 5 days a week, for:

- 60-90 minutes, to improve bone density,
- 60 minutes, in the position of bilateral hip abduction within the range of 30-60° to improve hip biomechanics,
- 45-60 minutes, to prevent contractures and improve the range of lower limb joint mobility,
- 30-45 minutes to reduce spasticity.

Tilt tables, seats and wheelchairs with accessories enabling supported standing as well as mobile and stationary standing frames are used to support the posture during standing. Anterior and posterior standing frames are distinguished, depending on how the patient is positioned versus the supporting part [8, 30]. The posterior standing frames are usually used for people unable to control head and trunk positions or for people with considerable flexion contractures of the hip and knee joints. The patient uses the standing frame in the lying or sitting position, and the degree of standing frame inclination is adjusted depending on postural tone and the pattern of lower limb positioning. In the anterior standing frames, the patient is tilted forward from the body axis, which prompts head and trunk extension activity. Support at the level of the knee and hip joints generates the forces extending the joints and stretching the hip flexors and the posterior femoris and crural muscle group. A belt at the buttocks level together with anterior support ensure proper pelvic positioning. The disadvantage of the anterior standing frames is the way of placing patients inside (assisted by third persons), thus their use for taller and heavier people might pose problems.

The purpose of supported standing is to [10, 30, 31]:

- normalize muscle tone,
- maintain posture linearity and symmetry, prevent secondary motor system deformities,
- support postural development (standing on one's own),
- prevent bedsores,
- increase bone density,
- assist the functions of the respiratory, digestive, excretory and cardiovascular systems,
- motivate to be active,
- facilitate socialisation and communication (being able to talk to others "face-to-face").

In the opinion of people with CP, using supported standing is beneficial because it enables you to change your position, reduces spasticity and pain and improves participation opportunities. On the other hand it can induce pain (especially of the feet) and enhance the feeling of being dependent on others [32, 33].

The posture in the standing frame should be symmetrical, and the lower limbs position should be as close to the physiological position as possible. The lower the degree of standing frame tilt from the perpendicular position, the higher the load transferred to the feet. Pountney et al. [10], recommend the 10° tilt forward from the perpendicular

position and slight hip abduction. The device should be equipped with adjustable foot plate, front and lateral supports of the trunk, front support of the lower limbs, a pelvis stabilizing belt. A necessary accessory is a tray that can be used for activities, such as taking meals, communication, playing, learning or as an additional supporting device (to support the upper limbs).

The Effects of Using the Postural Management Programme

First of all maintaining the symmetrical posture under the postural management programme is intended to prevent neurogenic hip dislocation. It is the consequence of spastic hip disease, leading to pain, pelvic obliquity and then the development of neurogenic scoliosis. Very few studies have undertaken the problem of its effectiveness so far. Most tests conducted on few, clinically diverse treatment groups, without control groups, are often retrospective evaluations. However, please note that research work in this area is very hard to conduct for many reasons, including but not limited to: group selection (its uniformity and size), research duration (long-term evaluation, time-delayed effect), control over research completion (interventions mainly conducted in the home environment, under parent's supervision).

Hankinson and Morton [22] recorded the reduced value of migration percentage of the femoral head (MP) in the group of 7 children with hip subluxation using the system of positioning during lying for 12 months. Due to discomfort during sleep, six children were excluded from the test. A slight reduction in wake-up incidence was observed in other test participants (1.3 vs. 1 per night). Sleep quality in people using equipment during the night's rest was evaluated by Hill et al. [34] and Underhill et al. [35]. Underhill et al. [35] did not record sleep quality deterioration. Neither did Hill et al. [34], however the authors recommend oxygen saturation monitoring because its drop was observed in 6 test participants, in comparison with sleep without the equipment supporting the lying position.

Picciolini et al. [36] compared hip joint condition in the patients with bilateral CP undergoing the NDT therapy for two years (control group) with the group of patients undergoing the combined therapy (NDT with postural care, treatment group). The average age of the treatment and control groups was 3.5 (2.5 SD) / 3.5 (2.9 SD), respectively. An individually adjusted seat was used for 5 hours every day as part of the equipment used. Significant differences were identified in the MP values between both groups. In the two-year period, MP increased in the control group (23.0/37.7), whereas it slightly decreased in the treatment group (28.8/26.8). It was determined on this basis that the implementation of the postural management programme prevents the progression of hip dislocation.

Macias-Merlo et al. [37], compared the MP value in children at the age of 5 years with spastic diplegia, GMFCS III, in the groups using, from 12-15 months of age, standing position support and physical therapy vs. those using physical therapy only. In all the children from the treatment group, MP was lower than 33%, whereas it exceeded 33% in 8 children from the

control group. The authors did not specify the initial MP values. The effectiveness of the application of the 24-hour postural management programme encompassing posture support during lying, sitting and standing was appraised by Pountney et al., in retrospective and prospective studies [16, 26]. The retrospective appraisal measured the degree of hip migration in patients with bilateral CP divided into three groups: the group using posture support during lying, sitting and standing, the group using posture support two out of three positions, and the group using posture support during sitting or not using support at all. The results indicate that the use of support in three positions in children without identified hip subluxation results in less hip deformities [26]. The prospective study compared the condition of hip joints of 39 children in which the postural management programme was implemented before 18 months of age with the children not using the programme (the group from the examination by Scrutton et al. [38]). No significant differences in the MP values were identified between the appraised groups at the age of 5 years. However, a higher percentage of children with MP lower than 33% (59% vs. 50%) was recorded in children using postural support.

Angsupaisal et al. [39], based on the conducted review of studies related to support during sitting, stated that their quality was low and the methodology doubtful, thence the results were insufficient to appraise the effectiveness of interventions and making clinical recommendations. Chung et al. [27], and Ryan [28] reached similar conclusions. This problem relates also to the studies appraising the effectiveness of standing support, which was regarded as the one with a potential impact on spasticity reduction, motor system deformities prevention, bone density increase, improvement of respiratory, digestive or excretory functions [29].

Conclusions

Based on the review of source literature, we can state that the implementation of the postural management programme and the application of the equipment supporting the lying, sitting and standing positions is ideal for the process of rehabilitation of people with CP. However, no interventions were identified that would clearly indicate therapeutic benefits in the areas indicated by the International Classification of Functioning, Disability and Health. Therefore there is an urgent need to carry out high quality studies verifying the effectiveness of postural management programme application. This standpoint complies with the standpoint represented by the authors of other studies [40].

The role of the therapeutic team members is to advice on equipment selection and application, define the action strategy, control its application and support and motivate the carers and the patients.

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